

THE
CHICAGO MEDICAL
JOURNAL & EXAMINER.

VOL. XL.—MAY, 1880.—No. 5.

Original Lectures.

ARTICLE I.

AN ADDRESS ON THE NATURE OF THE SCIENCE AND ART OF MEDICINE, AND THEIR RELATIONS TO THE VARIOUS IMPORTANT INTERESTS OF THE PEOPLE. Delivered before the citizens of Lincoln and the members of the Illinois State Medical Society, May 21st, 1879. By N. S. DAVIS, M.D., LL.D., Chicago, Ill.

Fellow Citizens and Brethren of the State Medical Society :

In compliance with an earnest request from the Committee of Arrangements, I rise to address you, briefly, on a topic of universal interest and great intrinsic importance. I allude to the Science and Art of Medicine and their relations to the important interests of the whole people. The science of medicine is that field of knowledge which is capable of being used for the prevention, alleviation, and cure of diseases; and consequently for the prolongation of human life. The art of medicine is the direct or personal application of such knowledge, either in the execution of sanitary measures for the prevention of disease, or in the application of remedies at the bed-side of the sick.

The field of knowledge that constitutes the science of medicine does not consist in a fixed system or aggregation of rules based on one or two theoretic principles or dogmas, as is indicated by various words and phrases in popular use; but is made up of items drawn from all the departments of the natural, physical, and mental sciences. Man, the great central object of the physician's study, both in health and disease, is but the highest link in the chain of animate beings, and the study of the structure and functions of his body, constituting human anatomy and physiology, is aided and illuminated at every step, by the facts embraced in the departments of zoology, natural history, chemistry, and physics. As a living being, man, in all stages of his existence, is in intimate relation to, and constantly influenced by the physical elements that surround him.

Therefore we cannot advance one step in the study of the causes of disease and the laws that govern their action, without a knowledge of the earth, the air, the water, the products of vegetable and animal growth and decay; or in more technical language, without entering directly into the departments of general science, called geology, meteorology, topography, hydrology, and general chemistry. *Materia medica*, which embraces a knowledge of the various substances and agencies that can be used for the prevention and treatment of diseases, draws its material alike from the organic and inorganic kingdoms of nature. The domains of mineralogy, chemistry, botany, and psychology, are all laid under contribution for materials of greater or less value, in the prevention, alleviation, and cure of disease. You will not fail to perceive from these few sentences, the truth that medical science does not consist of a few rules derived from certain theoretical dogmas or supposed laws of morbid action, but is rather a vast accumulation of facts and materials gathered from almost every department of human knowledge. They also show two other facts that should be more generally recognized, namely: first, that true medical science is strictly coeval in its origin with that of the various branches of general science; and, second, that its progress and practical application have kept even pace with the progress and development of all other departments of human knowledge. And not only so, but stimulated by the desire for

more facts and agencies capable of practical application in their high calling, the ranks of the medical profession have furnished a large proportion of the most active and successful cultivators of all those branches of science with which medicine stands connected. It is often alleged as an opprobrium or objection to our profession, that its science is unstable and its modes and instruments of practice ever changing. The objectors apparently forget that the same allegation could be made, with equal force, against all the natural or physical sciences, the changes and progress in which, have been so great and rapid as to change the whole aspect of civilization during the last hundred years. That which appears to the uninitiated as instability in our profession, is only the necessary result of progress, and will continue so long as the botanist finds a new plant or shrub; the chemist a new element or combination of elements; the microscopist a new germ, or the professor of physics a new application of the laws of mind or matter. Indeed, it is this progress, *pari passu*, with the advancement in other departments of science, that constitutes the chief glory of modern medicine, and distinguishes it from all the pathies and isms or so-called special schools of medicine both in ancient and modern times. The art of medicine, consisting of efforts to heal the wounded and cure the sick, existed long before there was anything connected with it meriting the name of science. It was in those early days, that so-called schools or special systems of medicine, had their origin. The men, who from official position or superior mental endowments, gained an influence over their fellows, would often invent some theory of disease, accompanied by arbitrary rules of practice, and these being espoused by their followers, became the foundation of a school or system, taking either the name of their inventor or of some prominent feature of the theory itself. Thus the theories and maxims of Hippocrates, Galen, Celsus, Cullen, Hoffman, Brown, Boerhave, Sydenham, and others, each in turn ruled the minds of their followers and constituted the dominant school or system of medicine for the time. But the progress made in the development and verification of all the sciences during the last century, has placed anatomy and physiology, human and comparative; materia medica and chemistry; therapeutics and pathol-

ogy, on so broad a basis of ascertained facts, that mere closet speculations and theoretical dogmas have been well nigh driven from the field of legitimate medicine. The medical investigator of to-day does not spend his time in idle dreams over the question whether all the ills that afflict humanity arise from one or more imaginary humors; whether they all consist in either primary irritation or in primary debility; or whether they are all subject to one universal law of cure; but he recognizes the all important fact that man, the central object of his study, is simply a living, sensitive being, constantly influenced for good or evil, by all the physical and mental conditions that surround him.

He recognizes the equally important fact, that disease, instead of being an entity, a mysterious something pervading the human system, or an equally mysterious infliction of the gods, is simply a deviation, in some direction, from the standard of health, in one or more of the functions or structures of the human body. Hence the student and practitioner of rational scientific medicine must take his scalpel, test-glass, microscope, etc., and enter the domain of nature along side of the chemist, the geologist, the botanist, the comparative anatomist, the mathematician, and the philosopher, and learn the causes and nature of diseases by observation and logical induction.

It is the substitution of observed facts in the place of fanciful theories, and the adoption of inductive methods of reasoning in place of closet speculations, that has so rapidly enlarged the boundaries of medical knowledge, and literally given birth, not only to numerous discoveries of the highest importance, but to the whole grand field of sanitary, preventive, or state medicine, on which is founded all those modern sanitary measures that have contributed so much to the health and comfort of the millions who occupy large cities and closely populated districts, and has added materially to the average duration of human life, during the last half century.

Even during the forty-five years that have elapsed since I entered upon the study of medicine, the domain of its science has increased in every direction, taking in on every side entirely new fields, such as organic chemistry, microscopy, histology, physical diagnosis, public hygiene, etc., and its storehouse of

observed facts and logical deductions concerning the causes of diseases, the laws and conditions of their propagation, and consequently the means of their prevention; also, the means for attaining certainty in diagnosis, as well as for alleviating pain and curing disease, have more than doubled. I repeat, then, that medical science is not a system or bundle of metaphysical theories invented by some transcendental philosopher, or a school of speculative philosophy, but it is the selection and appropriation of all those facts and principles from every department of human knowledge that can be made subservient to the grand purpose of preventing or alleviating the ills of our race. Neither is the true physician of to-day, the blind dogmatic follower of a master, whose name he meekly wears upon his collar or nails upon his door-post; but he is preëminently a student of nature and of nature's masterpiece of workmanship—man. He freely draws his facts and materials from every possible source, and uses them in accordance with the dictates of his own well disciplined mind. If he detects the cause of a disease, he endeavors to remove or neutralize it. If his patient is burning with fever and restless with excitement, he endeavors to cool the one and reduce the other. If he is exhausted and feeble he endeavors to sustain him. He gives large doses or small ones, or no doses at all, as his own enlightened judgment may dictate, with none but his own conscience to molest or make him afraid. In a word, the rational, scientific physician, selects his remedies from any and every field where they can be found, and applies them for the prevention and cure of disease in accordance with the principles of common sense, guided by a disciplined and enlightened judgment. Consequently he has no need to attach an *ist*, an *ic*, an *ism*, or a *pathy* to his professional title. It is often said, and the same was repeated by the eloquent member of the legal profession who so cordially welcomed the members of this society to the hospitalities of your goodly city, that the science of medicine has progressed far in advance of the art.

If those who make this assertion will take the trouble to look at the long list of instruments by which we are enabled to explore the most hidden recesses of the human body, not excepting the interior of the delicate organ of vision, by which we not only

detect the existence and location of disease, but the exact stage of its advancement, and the consequent greater certainty and accuracy in the application of remedies; if they will look at the list of anæsthetics for the relief of pain, the nervous and arterial sedatives for allaying nervous restlessness and controlling the circulation, the mechanical appliances for dressing wounds and injuries, preventing or relieving deformities, and a thousand other things that have been added directly to the daily practice of our art, during the last fifty years, they will not fail to acknowledge that the practice of our art in all its aspects, has profited to the fullest extent by every step in the advancement of its science. But I am dwelling too long upon the nature of the science and art of medicine, and must hasten to inquire, what are their relations to the interests of the whole people? The answer to this inquiry has already been clearly indicated, in a general way, by the preceding remarks. It is desirable, however, that an answer should be given more direct and in detail. In doing so, I shall discuss these relations under three aspects, namely: their relations to the individual and family circle; to the public health, and to the public morals. The desire to obtain relief from suffering is an instinct of our nature. And such are our individual relations to the ever varying physical and mental influences with which we are continually in contact, that sooner or later almost every individual and family seeks the aid of the medical man. Hence it is no exaggeration to say, that, at some time, every individual must come in contact with his physician, and that, too, in a relation the most intimate and important. And there is probably no class of men, of equal number, whose relations to individuals and families, afford them opportunity for doing more good or more harm, for contributing more to individual happiness or misery, than the members of the medical profession. I shall not stop here to arouse your full appreciation of this personal relation of every individual to his physician by calling to your mind the anxiety, not to say impatience, with which you wait for his approaching footsteps, when either accident or disease is holding life in jeopardy or torturing you with pain. Neither will I attempt to describe the painful anxiety with which the mother listens to each word and watches each

motion or expression of him into whose care she has committed her sick and tender child. No man or woman in this audience who thinks for one moment, can fail to perceive their own direct personal interest in all that relates to the education, the skill, the intelligence and the integrity of the medical profession. Not one of you know the day or the hour when your dearest earthly interests may not be in the keeping of some one of its members. Is it not, then, your individual duty to lend your influence to all such measures as are calculated to secure to the members of that profession the highest degree of intelligence, skill, and virtue?

If the relations of the profession are thus interwoven with the most important and sacred interests of every individual and family, they are no less so in regard to everything pertaining to the public health and public prosperity. We are too apt to think of the physician only in his daily work of administering to the sick, and forget that it is the practical application of the facts and principles of the science he has been cultivating from generation to generation, that has led to all the improvements in the construction and ventilation of dwellings and public buildings, the widening of the streets, the sewerage of cities and drainage of country districts, the adoption of measures for preventing the contamination of the water supplies; the removal of filth and the prevention of overcrowding, whether in cities, work-shops, schools, public charities, prisons, or on ships; the sanitary management of armies, and the limitation of the spread of contagious and infectious diseases. Yet all this is true. For while the introduction and spread of the Christian religion has modified the asperities and cruel passions of man, awakened all the kinder and nobler attributes of his nature, and created within him a *desire* to alleviate the sufferings of those around him, it has been, at every step of progress, the practical application of medical science and skill that has guided every measure really promotive of the public health. And yet the benefits capable of being derived from this source are only in the infancy of their development. With the advanced condition of chemistry and other physical sciences, and the improved appliances and methods for the most minute and searching investigations in all directions, it only requires patience and a cordial co-operation between the

profession and the public, or its representatives in authority, to achieve results for the public good, more important and enduring than any that now grace the pages of medical history. The public often accuse the profession with being too conservative; too much wedded to old doctrines and usages; too slow and reluctant to assent to new truths and additional facts. Your representative in his excellent address of welcome in our first morning session here, re-produced this charge, and it constitutes the common breastwork behind which the advocates of every preposterous theory, from the blunt expressions of stolid ignorance by Samuel Thompson, to the transcendental vagaries of Hahnemann, constantly take refuge.

If we refuse to stultify the dictates of common sense, and set aside all the ascertained laws of mind and matter, for the purpose of persuading ourselves that the potency of any body or substance increases in mathematical ratio to the attenuation of its atoms, and that the true way to remove the symptoms of any one disease is to give an inconceivably small part of something that is supposed to be capable of producing symptoms the nearest possible in likeness to those we wish to remove, we are at once written down as illiberal and bigoted. In a word, if we do not deny the evidence of our senses and fully believe that the sun's rays increase in their power and influence in direct ratio to their scantiness, and abrogate our common sense by consenting that the best way to remove a public nuisance is by creating another as near like it as possible, we are gravely told that the grand discoveries of Harvey, Jenner, Wells, and others, were opposed by their contemporaries, and therefore (note the logic) we must be bigoted and illiberal. The truth is, that if we, as a profession, err in this matter, it is certainly not in the direction of conservatism or adherence to old doctrines, but in the too great readiness to adopt novelties—to confound coincidences with causes—and to draw important conclusions from insufficient data, or from an incomplete observation of the facts. And a careful examination of the whole history of our profession will show that every important discovery or improvement hitherto made, has been actually adopted before the disappearance of the generation cotemporary with such event, and just as fast as a just regard

for an adequate examination of the nature of the facts on which it rested could be made. It is a natural and most important tendency of the enlightened and disciplined mind, when asked to assent to any given proposition, to demand and carefully scrutinize the facts on which it rests.

It is, indeed, this tendency, that lies at the foundation of all true advancement, in any and every department of human knowledge. Ignorance and want of mental discipline are the prolific parents of credulity and error. It is the duty of the community, therefore, to encourage, and in some directions, afford special aid to the profession in devising and carrying into execution plans for patiently observing and recording facts; pursuing special investigations, for the purpose of deliberately making important practical conclusions. I allude here especially to the enactment and maintenance of well devised laws for enabling the profession to put on record complete statistics of births, deaths, the prevalence of epidemic diseases, the keeping of complete meteorological records, the making of exact topographical surveys, and the institution of carefully devised experimental researches. Many of the questions and problems pertaining to the origin, laws of progress, and consequent means of the prevention of epidemic diseases, in the proper solution of which the highest interests of the people are involved, cannot, from the extent and complex nature of the elements to be considered, be reliably solved without a combination of observers acting in harmony through a series of years. Such combinations, the profession in every part of the country, are not only willing but anxious to make. But to be successful, they need, in some respects, the cordial coöperation, and to some extent, the pecuniary aid of the people through their municipal, State, and perhaps national legislatures.

I am sure that the non-professional part of the audience I now address will give due heed to these suggestions. But I have intimated that our profession bore, in some way, an important relation to the public morals, as well as to the public health.

That every enlightened and influential class of citizens, necessarily exerts more or less influence for good or evil, over the general tone of public morals will be conceded by every thoughtful individual. When we remember, however, that the members

of the medical profession have access to every fireside, and become the special advisers in regard to the habits, modes of life, and mental and physical training, as well as the confidential supervisors of the morbid effects of vice and folly, in all classes of human society, it is easily seen that the influence they do or can exert over public morals is paramount and all-pervading, and carrying with it a responsibility seldom fully appreciated, I fear, by the profession itself. When we remember how large a part of all the vices, crimes, and even diseases of every community, are more or less dependent upon the use of alcoholic drinks and the indulgence of licentious propensities, and how great an influence the firm and united action of the profession could exert if brought to bear in all the intercourse of its members with the community, in regard to these indulgencies, we cannot exaggerate the importance of their influence or the extent of their responsibility. But time will not permit me to enlarge upon this part of my theme, neither is it necessary before an audience so intelligent as the one before me.

If I have succeeded in conveying even an imperfect idea of the nature of the science and art of medicine, and their important relations to the highest interests of every civilized community, you will certainly agree with me in the proposition that everything which relates to the education, the organization, and the encouragement of the medical profession, is worthy of your most cordial attention. In conclusion, I must address a few words more directly or exclusively to my brethren of the State Medical Society. From an active intermingling with the profession in all its relations for little less than half a century, I may venture to ask your attention to the following suggestions:

First. By watching the proceedings of all our social organizations, I have been strongly impressed with what has seemed to me a great loss in valuable results from the immense labors of our profession, on account of what may be called fragmentary methods of work. Each individual investigates and writes from the single standpoint of observation occupied by himself; when a large proportion of the questions and problems awaiting solution absolutely require coincident observations in many places, by many individuals, on uniform plans, and through several years of time.

And if a part of the time and attention of every Medical Society was devoted to carefully devising such plans of investigation, and a part of its funds devoted to the procuring of the necessary means and instruments for carrying on the work, requiring regular reports of progress every year, we would make far more rapid progress both in the science and art of our profession. The annual results from such well devised lines of continuous observations and records would generally be comprised in a dozen pages of our transactions, but they would be pages of real additions to our stock of knowledge, worth far more than a volume of conflicting and isolated facts. The American Medical Association, at its recent session, appointed a committee to start work in this direction, and I hope this society will cordially coöperate with the general work of that committee.

Second. I wish to urge upon you, and through you upon the whole profession of the State, the great importance of more completely organizing the profession in every county and district, so that the benefits of social intercourse and combined action shall be far more completely realized.

In union and frequent intercourse there is not only strength, but progress, elevation, enjoyment, friendship and purity. Let us then toil on, shoulder to shoulder, in the great work of preventing, alleviating, and curing the diseases of our fellow men, until the simple name of physician shall be so honored that no man will dare to qualify it by any other adjective than the one applied to the apostle Luke in the days of the Son of Man.

ARTICLE II.

FOLLICULAR ABSCESS OF THE URETHRA. A Clinical Lecture, by Prof. FESSENDEN N. OTIS, of New York, delivered at the College of Physicians and Surgeons, New York City.

The patient presented to the class was suffering from gonorrhœa, and besides, called attention to a small hard "lump" situated on the under side of the penis, in the median line and about one inch and a half from the meatus urinarius. In reference to his gonorrhœa, the man stoutly denied recent venereal

contact, although he acknowledged that a previous clap which he had three or four years ago, was of venereal origin. In this connection, Prof. Otis said, "It really makes no difference in your treatment of a gonorrhœa whether your patient says he got it from the seat of a water-closet or not, nor are you, as far as treatment is concerned, to always credit the various stories these patients tell about the origin of their trouble. You have the diseased state before you, and you are to treat it as it presents itself. And yet there may be a gonorrhœa without venereal contact, which behaves exactly like a true gonorrhœa, and may have all the complications. In this particular instance, I do not see any special reason for doubting this man's word when he denies venereal contact. I once knew a case of this false gonorrhœa, which happened in the family of a gentleman who had several children. One of his children had a purulent ophthalmia and it was customary for the gentleman to attend to the necessary manipulations about the eyes himself. Another of his children had some trouble with the penis, and this also the gentleman cared for. It was his custom to attend to the eyes first. After a day or two, however, a purulent discharge appeared from the other child's penis, and this was followed by swelled testicle. It was a case of gonorrhœa produced by infection from the ophthalmia. In fact, it is a common thing to have a gonorrhœa develop itself in a man who has had a stricture for ten or fifteen years, without venereal contact. I have seen men marry who had a slight gleet, and who were permitted to marry by their physicians, who communicated a gonorrhœa to the wife eight or ten days after marriage. I knew of one very fatal case of this kind, where a gentleman, in the first week after marriage, infected his wife's eye with gonorrhœa, which eye she lost, and shortly before the end of the honeymoon, the other also. This man may have a gonorrhœa without venereal contact. It is then a gonorrhœa by mediate and not direct contagion. In the mediate, there is a shorter course. It does not take a long time for the poison of a gonorrhœa, when exposed to the air, to be destroyed, which perhaps explains why so few of us become infected by this mediate contagion, and also why these mediate gonorrhœas run a shorter course.

The man has told us of this tumor on the under side of his penis. It is situated an inch and a quarter from the meatus. I hold it under my finger. It is hard, presents no sign of fluctuation, and gives the man no pain. He tells us that it has been aspirated by his physician, but that no pus was found, so that, whatever it is, it is a neoplasm, but has not a purulent center. It is too far forward for Cowper's glands. He says that at first it was about the size of the head of a small pin, and gradually grew larger. There are several things that must not be overlooked, which may have produced this tumor. "Have you ever had any sores on your penis?" "Yes." "Or lump in your groin?" "Yes." "Or eruption on your body?" "No." "Ever had sores in your mouth, or ulcerated throat?" "No, sir." "Hair come out a good deal?" "Yes, sir." The patient does not seem to have had any eye trouble or headache, or signs of nodes. I am trying to connect this tumor with syphilis—an attack which happened a long time ago, not a recent attack. If this growth is of syphilitic character, it is a gummous tumor. Last winter, you will remember, we had such a case, where the tumor ulcerated and was supposed to be an infecting sore. This growth, however, is not a gummy tumor. There is not the characteristic enlargement of the glands nor other corroborative evidence. What comes next, then? The most likely thing that I know about is a follicular inflammation. The urethra, as you know, is studded with follicles. They are very minute—not much larger than a cambric needle. They may become involved in the inflammation of the urethra, and a minute suppuration occur in the mouth of the follicle, which then may be closed—plugged up. This little molecule of matter burrows along and forms a sinus, making an independent opening, the pus being pushed back into the urethra from the outside. This is more likely to occur within an inch or half an inch from the meatus. The urethral end of the follicle becomes sealed up, and you have a follicular sinus left. A case of this kind was reported by me as far back, I think, as 1870. I remember a case of a gentleman with gleet, who had been treated a long time, but without success. On examining him, I found a little white point, the size of a needle point, an inch behind the meatus. It had been there,

he said, for a long time. Occasionally matter came out. I introduced a fine probe, and after injecting it with indigo, found the stain of indigo on cotton which I had placed in the urethra previously. I then sharpened a hypodermic needle down to a fine point, and introducing it into this little sinus, injected a forty grain solution of the nitrate of silver, and the gentleman had no more trouble. The sinus healed up, and his gleet got well. This little canal had been the seat of a gonorrhœa all the time, and the ordinary injections never reached the inflammation. I have found in cases where the same thing occurred, abscesses formed, which in some instances were absorbed, but in fifteen or twenty cases the matter came to the surface.

Dittel has shown the gravity of these cases where they occur in the deeper portions of the urethra, where, as a result of perforation, independently of stricture, extravasation of urine has occurred, which has proved fatal. This has been traced back to a follicle in the neighborhood of the membranous urethra, the urine being let through in very small quantity at first, and then in larger quantities.

These bunches, then, come from the urethra, following a gonorrhœa. They are not independent, but are the result of a suppuration. Why does this occur? I believe, and have found in every case, that they always occur in a follicle situated *behind a stricture*; that the condition of things which exists behind a stricture is the condition which invites this inflammation. Where there has existed a long standing irritation, it is not wonderful that there should be inflammatory action excited.

Dittel noticed that in all these cases there were *rings* of mucus in the urine. You have rings of mucus because they come from a circular point of irritation, which holds the mucus in the form of a ring. These rings of mucus are one of the signs of stricture, and these rings come from behind a stricture. So whenever you find a sudden swelling in the vicinity of the urethra, examine for stricture. I never fail to find it, and shall find it in this case before you. My own impression is that here we have a stricture which has occurred after an old gonorrhœa, and after a new irritation it has resulted in a neoplasm, an inflammation set up by the continuous irritation, and this is the result of stricture.

Some years ago I called the attention of the profession to the case of a gentleman from a neighboring State who was suffering from an obscure disease of the genito-urinary apparatus. It was supposed to be malignant, because of the ulceration of penis and scrotum. He had had a swelling in the scrotum, which kept increasing very slowly for five years, until it got to be of the size of a child's head at term, very red and insensitive. He did not seem to be troubled at all by it. However, he had an attack of malarial fever, and was reduced very low, and while in this condition the bottom of the scrotum began to slough, and a nasty, dirty abscess appeared, which seemed to be the result of some malignant process. However, it became healthy looking, and finally healed up, and then another abscess formed an inch above, and in ten days opened just as the first, and followed the same course; then another and another, each one higher up, until finally another abscess formed on the side of the penis, which was followed by such inflammation that the foreskin became restricted and gangrenous; three or four openings into the urethra resulted, out of which he made his water. His scrotum had by this time regained its normal size. At last a little abscess occurred at the root of the penis, and was followed by urinary abscess. Then there was talk of removing the penis, and he came to this city. Here there were a number of opinions, but the feeling was that the trouble was lupous.

Then he came under my care. I thought he had a follicular sinus which came from behind a stricture, and on passing a bulbous sound, I found a stricture which warranted me in the conclusion that the urinary infiltration had got into the tissues and had resulted in the formation of a neoplasm in the scrotum. This slowly increased by almost imperceptible degrees, because of the gradual addition of urinary material until when the health became depressed, the tissues could resist no longer, but gave way at the most dependent point. The resulting inflammation closed up the sinus for an inch or two; then the urine settling at that point, gave rise to another abscess, each abscess closing up the line of the tract until the penis was reached. When he came to me, he had been suffering from a terrific amount of reflex irritation, keeping him from sleep, an amount of irritation which I

have never seen except in connection with stricture. His urethra had never received the slightest attention, and on passing a sound, during which I thought he would have had an epileptic convulsion, so sensitive was the urethra, I discovered three strictures, which I divided. The result was that he was relieved from the irritation which had been so disgusting. The relief was *immediate*. The next morning he said to me, "Doctor, for such a night of rest as I passed last night, I would be willing to undergo that operation every day." The abscess healed in ten days, and he became perfectly well.

I have told you this long story to show you how important it is to recognize and properly treat these hard, insensitive bunches. They may give the patient no trouble for the time being, but they will at some time or other. Whenever you find these bunches on the under side of the urethra, get into them as soon as you can. They are usually hard, insensitive, sometimes there are four or five little hard bunches. Sometimes these come from behind a stricture where you could pass a twenty-six or twenty-eight sound. Such a case I saw in consultation once. A young gentleman had one of these swellings in the urethra, and the attending surgeon cut down to the urethra, but not into it. Suddenly the swelling returned, and this time there was no mistake about it; a section was made into the urethra, a stricture divided and the gentleman made a good recovery. Here the follicular departure occurred where you could pass a twenty-six or twenty-seven sound.

Early operation is the rule in these cases. Remember that you are having urine leak into the tissues all the time through these little sinuses; it need not be large in quantity; it may be only enough to produce neoplastic material, but it goes on all the time and if the thing is not looked to and remedied by early operation, it will prove a source of trouble at some time or other, which trouble was clearly *preventable* by seasonable interference.

Original Communications.

ARTICLE III.

SELECT TOPICS OF MODERN SURGERY. Illustrated by Cases from the Hospital Service and Private Practice of DRs. E. W. LEE and CHR. FENGER. Read before the West Chicago Medical Society.

TUBERCULOSIS OF JOINTS.

Miliary tubercles in the synovial membranes of the joints were first mentioned by the father of modern pathology—Rokitansky. (Pathological Anatomy, Sydenham Society Edition, London, 1850. Vol. III, p. 296.) No attention was paid to the subject, however, for a number of years.

Richard Volkmann, the eminent author in modern surgery on bones and joints, was the first surgeon who published in the leading surgical literature investigations which confirmed Rokitansky's previous observations on tuberculosis of the bones and joints. (Pitha and Billroth, *Chirurgie, die Krankheiten der bewegungs Organe. Abschnitt V*, p. 260.) Volkmann considered tuberculosis of the bones and joints as a rare disease, as is readily seen in his description of the white swelling and the caries of the adjacent bones. He justly pointed out the errors of the previous French authors on the subject, Nélaton and Lebert, who, retaining the original and old doctrine of Laennec, "where cheesy matter is found tubercles pre-existed," had described tuberculosis of bones and joints where no miliary tuberculosis had been demonstrated. Laennec's mistake as to the identity of cheesy matter and tubercle was cleared up by Virchow, who proved that necrosis of any variety of original or newly-formed tissue might

result in its transformation into cheesy matter, and that consequently it was premature to conclude that because we found cheesy matter present, it was due to the presence of previously existing tubercle.

Thus utilizing Virchow's observations, Volkmann was right in repudiating Nélaton's and Lebert's descriptions as false and unfounded, and he was at that time justified in pronouncing it an original discovery, the tuberculosis of the organs in question.

We were not able to make an indisputable diagnosis of miliary tubercle until Langhans, about ten years ago, gave an exact histological description of the young growth in its most minute details. Previously Virchow's description was accepted, viz., that it consisted of a small conglomeration of round lymphoid cells imbedded in a fine stroma of non-vascular connective tissue; and that the fate of these cells was a speedy fatty degeneration, due to lack of blood vessels in the little growth. By the microscopic examination alone we could not make a differential diagnosis between miliary tubercle and the miliary forms of malignant growths (as carcinoma and sarcoma). Also the same difficulty presented itself in the microscopic examination of normal elements, such as the lymphatic follicles of the intestinal tract; the tonsils; solitary follicles from Peyer's patches and from the colon, in which a diagnosis based upon histological grounds could not be made from miliary tubercle. Since Langhans's investigations we have been able to recognize, by aid of the microscope, the miliary tubercle even in places and tissues where none of its well-known characters were visible to the naked eye to call our attention to the true nature of the disease.

The unmistakable anatomical characters of the miliary tubercle thus established enabled Köster (*Ueber fungöse Gelenkentzündung. Virchow's Archiv*, 48, p. 49) to make the most remarkable and unexpected discovery that, in the great majority of the cases of so-called white swelling, tumor albus, caries of joints, chronic destructive inflammation of joints, miliary tubercles were found to be the origin of the disease. Thus the same miliary tuberculosis that in the lungs, brain, and uro-genitary organs was recognized as an inevitably fatal disease of variable duration,

made its appearance in the joints in a disease, the prognosis of which as to the life of the patient was not considered grave, provided the proper treatment was resorted to.

It was quite natural that Köster did not believe the facts evident to his own eyes, and expressed the opinion that fungous arthritism (white swelling) in spite of the thousands of miliary tubercles so often found in the various tissues of the affected joint, was a separate disease from the true tuberculosis of the joints, producing or accompanying the fatal and general tuberculosis of the internal organs.

It was now necessary for surgical pathology to engage in the investigation of a question of such vital import, and to sift our knowledge of tuberculosis in general, and specially with reference to its bearing on, and the consequent treatment of this disease in the joints.

The latest investigators, Volkmann, Friedländer, Schüppel, König and ourselves, though not numerous, form but one conclusion, and the results of their investigations all tend to confirm the true tuberculous character of the disease in question and do not admit the distinction of Köster between general tuberculosis and local tuberculosis of joints—the one benignant, the other fatal—but rather seem to foreshadow a change in our inherited views of the necessarily fatal prognosis of every disease originating in, or complicated with the presence of miliary tubercle in the affected tissues.

Numerous future investigations will be required to determine the theoretical as well as the practical importance of the new epoch in the doctrines of tuberculosis. Hoping that surgeons in this country will take their part in the solution of these problems, we will give the pathological anatomy of the disease, and later point out the main question in its relations to general tuberculosis, and its consequent rational treatment as far as our actual standpoint will permit.

The miliary tubercle shown in Fig. 1 is a small round tumor not visible to the naked eye. Its main characteristics are as follows: I. The giant cell reticulum—forming the central part of the growth and containing one or more giant cells. II. The

lymphoid reticulum containing a large number of lymphoid cells, forming the peripheral part of the tubercle and surrounding the former.

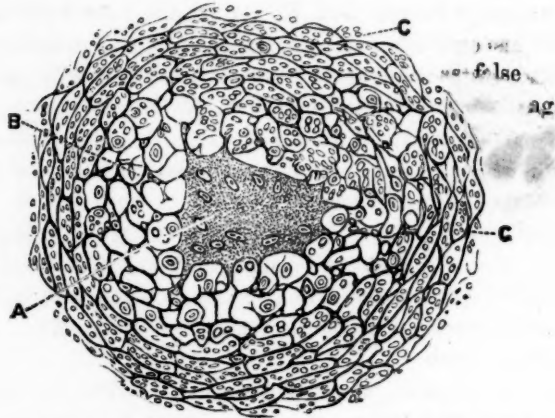


FIG. 1.—Young miliary tubercle in fungous granulations from excision of knee-joint. (Fenger.)

The wound was mainly healed by first intention but in circumscribed areas, oedematous, fungous granulations sprang up, and later broke down in circumscribed abscesses. These masses of soft newly-formed tissue were removed with the sharp spoon and after hardening the same in solution of chromic acid, the tissue shows young miliary tubercles only a few weeks old.

a, Giant cell; *b*, Giant cell reticulum with some large epithelial and many small lymphoid cells; *c*, Lymphoid reticulum.

The giant cell is a large, irregular and uniformly finely granulated protoplasmic mass, *a*, Fig. 1, containing a variable number of large oval nuclei, with one or more nucleoli. The nuclei are either scattered irregularly over the cell mass or are arranged in a row along the peripheral part of the cell. From the surface of the giant cell pass out long branched processes, which are continuous with the reticulum of the central portion of the tubercle.

The giant cell reticulum, Fig. 1. *b*, forms a net-work with large round or irregular meshes. Many of the meshes are empty, i. e., do not contain any cells, but are filled up with clear serous fluid. In a few of the meshes are found large epithelial cells with a plainly visible protoplasmic surrounding, and a well defined round or oval nucleus. A large number of the meshes

contain two, three or more small lymphoid cells or nuclei, many of which are highly refracting.

Outside of this giant cell reticulum we find the peripheral part of the tubercle consisting of the (*c*) lymphoid reticulum or small celled tissue of adenoid-like structure. The meshes of this reticulum are narrow, long, oval, or spindle-shaped spaces, their long diameter being perpendicular to the radius from the center of the tumor. They are filled entirely with innumerable small, round more or less refracting cells or nuclei.

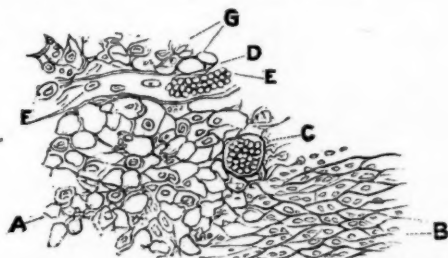


FIG. 2.—Young adenoid tissue surrounding the miliary tubercles—from case of excision of knee-joint: *a*, Tissue with large round meshes; *b*, Tissue with oval, narrow meshes; *c*, Transverse section of a small vein filled with blood corpuscles; *d*, Longitudinal cut of a small vein at *c*, filled with blood, at *f* empty, showing the nuclei of the endothelial cells; *g*, The outer wall of the vessel forming the reticulum of the interstitial net-work (frame work.)

The surrounding tissue, of recent growth in which the tubercles are imbedded, has, in its young state, invariably all the characteristics of the so-called adenoid or lymphoid structure, (as is shown in Fig. 2.) It derives its name from its similarity in structure to the lymph-glands, or the tonsils, or the adenoid tissue as we find it along the whole of the intestinal tract, or the adenoid vegetations from the naso-pharyngeal cavity. It consists of a fine connective tissue net-work with round or oval meshes, filled with lymphoid cells and nuclei.

It contains numerous blood vessels with thin walls, the external coats of which are transformed into or take part in the formation of the branches of the reticulum. This adenoid-like structure of the connective tissue around the tubercles we found in all cases. [The same structure may be found in young con-

nective tissue, the formation of which plays no part in the growth of tubercle.] It grows out between the bundles of the normal tissues—fibrous, muscular, etc.—creeps along the vessels into the fatty tissue and causes thus the thickening of the soft structures of the joints, as we so often find it in the white swelling, where the capsule is transformed into a grayish, white, firm, inelastic, fibrous mass, varying from one to two lines to half an inch or more in thickness.

A transverse section through such a thickened capsule is shown in Fig. 3.

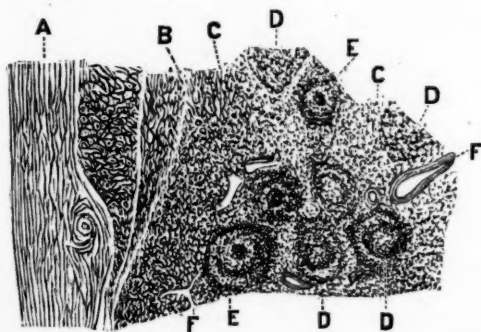


FIG. 3.—Thickened capsule of knee joint; case of resection of Dr. Fenger: *a*, Outer layer of normal fibrous tissue; *b*, Bundles of fibrous tissue inlaid with lymphoid tissue; *c*, Inner layer of adenoid tissue containing numerous tubercles; *d*, Tubercles without giant cells; *e*, Tubercles with giant cells; *f*, Vessels.

The following are the microscopic features: *a*, An outer layer of normal fibrillar connective tissue of the fibrous capsule of the knee joint. Inside of this, at *b*, two obliquely-cut bundles of fibrous tissue, partially transformed into adenomatoid tissue. Finally the thickest inner layer, *c*, consists of adenomatoid tissue, with a large number of disseminated miliary tubercles, some of which contain a large giant cell, *e*, *e*, while others, *d*, *d*, *d*, have a center consisting of the giant cell reticulum without giant cells, but all of them are surrounded by a darker ring of the lymphoid reticulum.

The metamorphoses and alternate fate of the miliary tubercle, as we learn from the most recent authors, are as follows: After an, as yet, undetermined term of existence, either simple atro-

phy or fatty degeneration commences in the center of the tubercle, where first the cellular elements and later the interstitial tissue become trasformed, partly into irregularly-shaped, soft corpuscles—the so-called tubercular corpuscles—and partly into a finely granulated fatty detritus.

In rare instances simple atrophy may occur in the cellular elements alone, meanwhile the reticulum gets thickened and the tubercle becomes transformed into a hard, horny mass. This transformation is considered a cornification, and is only rarely observed.

The partially atrophied and fatty degenerated tubercle will further undergo one of the three following metamorphoses:

Resorption may take place, especially where the tubercles are widespread and isolated. Wagner (Manual of General Pathology; translation; New York, 1876) regards this as a most rare occurrence.

Calcification is more frequent, and means transformation of the fatty detritus into cheesy matter, intermixed with chalky masses, finally encapsulated, viz.: surrounded by a capsule of dense cicatricial connective tissue.

Softening and liquefaction is justly considered the most important change, because it is most often accompanied by suppurative inflammation in the surrounding tissue. If the seat of the tubercle is on the surface—mucus membrane, skin, etc.—ulcers are formed, and if they are located in the interior of the organs, tuberculous cavities result, and tuberculous abscesses form and often become the starting point for suppurative processes, *i. e.*, the formation of abscesses around the tuberculous foci.

Wagner only expresses the general opinion of the profession when he says that the last named form of fatal transformation of the tubercles is of most frequent occurrence. In the remainder of this paper it will be seen that we do not quite agree with him in this conclusion. We consider, and are obliged to state, that as far as the tuberculosis of joints is concerned, absorption of the tubercles is of frequent occurrence.

A.—PRIMARY OSTEO-TUBERCULOSIS IN THE EPIPHYSES NEAR THE ARTICULAR SURFACE OF THE BONES.

The tuberculosis of the joints originates, according to Kocher and Volkmann, in the great majority of cases, not in the capsule

or any other of the soft parts, but in the spongy structure of the epiphyseal extremities constituting the joint, *i. e.*, it commences outside the joint as a tuberculous caries, or rather as a local miliary tuberculosis of the epiphyses.

A typical specimen illustrating this fact is shown in Fig. 4.

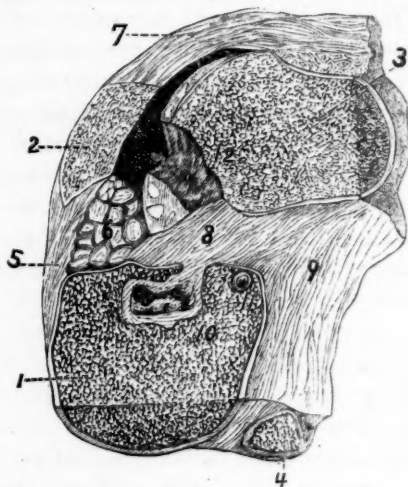


FIG. 4.—Longitudinal cut of right knee-joint: 1. Upper extremity of the tibia. 2. The patella. 3. The lower extremity of the femur. 4. The fibula. 5. The ligamentum patellæ (inferior), with 6. Its subjacent adipose tissue. 7. Ligamentum patellæ (superior) *i. e.*, the tendon of the quadriceps femoris. 8. The ligamentæ cruciatæ. 9. Posterior wall of the capsule with its fibrous ligaments. 10. Large tuberculous cavity in the upper end of the tibia, lined with a thick grayish membrane studded with miliary tubercles, and filled with cheesy matter. At the posterior end of the roof is an opening through which the cavity communicates with the joint. 11. A smaller round tuberculous cavity lined with a tuberculous membrane and filled with cheesy matter. 12. A large loss of substance (carious ulcer) in the external condyle of the femur with several smaller and one large, loose spicula of osseous tissue (sequestra).

It represents a longitudinal cut through the knee-joint removed at a post-mortem examination of a patient at the Cook County Hospital.

A short résumé of the records gives the following facts taken from the history published by Dr. Murphy, of Cook County Hospital, in the *Chicago Medical Gazette* :

“ *Primary osteo-tuberculosis of the superior extremity of the*

right tibia, tuberculous arthritis of right knee-joint. Secondary tuberculosis of inguinal glands, bladder, ureters, right kidney, and peritoneal cavity, commencing chronic tuberculosis of lungs, "pleuritis pyæmica."

Married woman æt. twenty; family history good as to tuberculosis; an aunt died of cancer of the mamma. Five years ago she began to have some dull pain in the right knee-joint; there was occasionally some swelling of the joint, which would last but a few days and then entirely subside, but the pain was a constant annoyance and seemed to bear no relation to the swelling of the joint. The pain was exaggerated by long standing or walking, but sudden pressure caused her no inconvenience whatever.

Eight months ago, just previous to urinary trouble from the commencing tuberculosis of the bladder, the parts about the joint became much more swollen, the knee was flexed at a right angle from which position motion caused severe pain. It thus continued very bad for about two months and then subsided gradually, but remained flexed, though to a less degree. There was no ankylosis for it allowed quite a latitude of motion. On moving her from her home to the hospital the knee was considerably shaken, which caused an acute swelling of the soft parts. On admission the right knee was found flexed at a right angle, from which position she could only move it to a slight degree. The entire articulation is considerably swollen and tender. The swelling appears to be partly due to a distension of the synovial sac, but also to a general infiltration of the soft tissues of the joint.

There are no sinuses leading into the joint and no scars resulting from previous abscesses.

For the remainder of the history we shall only state that for the last eight months she had suffered from urinary trouble and pains in the hypogastrium, signs of a chronic, steadily progressing cystitis and pelvic cellulitis, accompanied by loss of strength, anæmia, and latterly by fever.

The diagnosis was considered to be a tuberculosis of the organs before mentioned; the prognosis fatal, and death resulted twenty days after admission. The post mortem examination revealed the following:

The right lung contains numerous nodules consisting of peri-

bronchitic granules ; in the lower lobe a sub-pleural abscess about the size of an acorn containing sanious pus. The left lung contains peribronchitic granules but no abscesses.

The entire wall of the peritoneal cavity is studded with miliary tubercles ; the mesenteric glands greatly enlarged and mostly degenerated into cheesy matter.

The inguinal glands on the right side enlarged, softened and broken down into cheesy abscesses.

In the retro-peritoneal tissue above the right kidney is a large abscess filled with fluid pus, the walls of which are irregular, ulcerated, and contain numerous miliary tubercles.

The right kidney is filled with miliary and conglomerated tubercles which in some places are degenerated into large cheesy masses. In the pelvis of the kidney, the walls of the enlarged ureter and the bladder, are found large confluent tuberculous ulcers leaving only small islands of recognizable mucous membrane on their walls. The connective tissue in the pelvis minor is infiltrated with tubercles and cheesy matter, in the midst of which are found two tubercular abscesses, one of which opens into the bladder, and the other into the vagina.

The right knee joint is bent almost at right angles, and a little motion is obtainable. The circumference of the joint is somewhat enlarged. The skin covering it is natural. There are no sinuses nor cicatrices and no abscesses around the joint.

The cavity of the joint is filled with whitish, dry, cheesy matter of the consistence of putty. After the removal of this matter we find the capsule a little thickened and rigid, its inner surface being slightly uneven and velvety, but no miliary tubercles visible.

The cartilaginous covering of the articular ends of the bones is mostly destroyed and only small, irregular islands of cartilage left on the denuded and roughened osseous surfaces. In the head of the tibia, close to the joint, is seen a cavity (10) occupying the spongy portion and measuring 1.5 centimeters, in antero-posterior diameter 1 centimeter from above down and 2 centimeters laterally. This cavity is lined with a soft, grayish membrane 1 to 2 millimeters in thickness. This membrane consists of adenoid tissue, in which are imbedded thousands of miliary tubercles.

The cavity is filled with whitish, cheesy matter, similar to the cheesy matter found within the joint. Microscopically, this cheesy matter is seen to consist of a finely-granulated, fatty mass, with no recognizable cellular elements in it. This tuberculous cavity is in communication with the joint in two places; the one at its upper posterior part, as shown in the figure; the other at the right part of the roof, through the external articular surface of the tibia. Near the upper posterior margin of the tibia (at 11) is a small, round cavity of tubercular origin near the surface of the bone, but not as yet communicating with the joint. In the external condyle of the femur (12) we find a deep transverse, loss of substance or superficial erosion or carious ulcer, measuring 3 centimeters in length, 1 centimeter in width, and 4-5 millimeters in depth. Its walls are irregular and here and there are variable sized sequestra.

The local osteo-tuberculosis in the epiphyses, as illustrated in the above case, is, according to R. Volkmann, the eminent surgeon and pathologist and author of an excellent monograph on the diseases in question,* in the great majority of cases, the starting point of the chronic fungous arthritides, the scrofulous arthritides, the white swelling of the joints.

The tuberculous osteitis or osteo-myelitis in the epiphyses may be circumscribed or diffuse. Most generally it is local.

Through cheesy degeneration of the tubercles, that fill the place of the absorbed osseous tissue, there is formed a cavity filled with cheesy matter and lined with a membrane composed of living adenoid tissue and tubercles. In a number of cases there will be found variable sized pieces of dead bone or sequestra in those cavities for the following reasons: *First*, the tuberculous osteo-myelitis cuts off an island of unabsorbed osseous tissue from its nutritive supply and finally isolates it as a loose sequestrum. *Second*, a sudden cheesy degeneration and consequent death takes place in part of the tubercular, infiltrated, spongy osseous tissue before the absorption of the osseous substance can take place. The portion thus affected must therefore at a later

*Sammlung Klinischer Vorträge, No. 168-169, 1879. Ueber den Character und die Bedeutung der fungösen Gelenkentzündungen.

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period, form a loose sequestrum surrounded by cheesy matter, and the living tuberculo-adenoid membrane.

The cancellous structure surrounding the tuberculous cavity is in most cases healthy, the miliary tubercles not spreading far into the medullary spaces, but rather keep together in one circumscribed tumor as we find it in the conglomerated tubercles of the brain where the thin grayish membrane of miliary tubercles that circumscribes the central yellow cheesy mass is surrounded by healthy brain tissue.

This local characteristic of the tuberculosis is a fortunate peculiarity inasmuch as it enables us to remove the whole of the diseased part. It will be sufficient to empty the cavity and scrape out its lining membrane with the curette, or sharp spoon, or concave chisel, or gouge, for the complete eradication of the tubercles of the affected locality. We are thus often able to stop the progress of the disease with a relatively insignificant loss of substance of the epiphysis in question. Those primary local tuberculous foci are in some cases single, in others multiple, but the number is generally limited. Usually only one of the bones of the joint is the seat of them but they may be found simultaneously in two or all of the bones constituting the joint. Their place of election is close to the articular surface, immediately beneath the articular cartilage, and in children, in the neighborhood of the epiphyseal cartilage. A small subchondral primary tubercular focus may disappear in the later destruction of the joint, and thus we are unable to trace, at operation or autopsy, the tuberculous arthritis to its very origin.

There are found, however, and fortunately rarely, cases where the tuberculosis is not thus localized, but where the eruption of miliary tubercles spreads diffusely over the epiphyses resulting in an equally diffuse cheesy degeneration. In such cases the removal of the bone must be much more extensive, thus increasing the danger of operative interference. Volkmann's prognosis in these cases is grave as regards the danger of general tuberculosis, though not necessarily fatal.

In another class of cases, still more rare, a diffuse caseous degeneration takes place throughout the whole of the epiphysis where one or more local tuberculous foci are seated, and on section

of the spongy osseous tissue we find it yellow, dry and bloodless from cheesy degeneration, and dying as a result of the diffuse osteo-myelitis of the epiphysis. In these cases removal of the entire bone is demanded.

The local tuberculosis or cavity will slowly grow larger and larger, till finally it will perforate to the surface of the bone. Generally the disease is not revealed until this event occurs. Symptoms during the stage of development of the cavity but previous to its perforation, are conspicuous by their absence. There is, as a rule, no pain or disturbance whatever; but as soon as the surface of the bone is reached the adjoining organs or super-imposed tissues become poisoned by contact with the cheesy matter and inflammation results. Naturally we might infer that it is a matter of great importance whether the cavity opens within the joint or reaches the bony surface outside the same, and would modify greatly our prognosis as to the result of the disease and the fate of the patient.

If the tuberculous cavity opens outside the joint, the integrity of the latter will remain unimpaired, and extra-articular abscesses will form. Sooner or later these abscesses will reach the surface of the part by natural processes or be evacuated by surgical aid. They contain either normal pus or a thin, slimy or scrofulous pus.

The wall of the abscess is lined with a grayish, loosely-adherent membrane, and in structure it consists of adenoid tissue, studded with miliary and conglomerated tubercles, often visible to the naked eye as small, round, grayish, white nodules, similar to the tuberculosis of the large serous cavities—peritoneum and pleura—with which we are all familiar.

The fistulous sinuses resulting from these abscesses have little tendency to close up, partly because they communicate with the tuberculous cavity in the bone, and partly on account of the tubercles lining their walls.

The diagnosis of the tuberculous character of the disease can readily be determined by the removal of a portion of the wall by aid of a curette and examination of the tissue under the microscope.

At this stage of the peri-articular tuberculosis, proper treat-

ment will, in some cases, arrest further progress of the disease and save the endangered joint. The plan of the operation is obvious. We must cut through the fistulous tract down to the surface of the bone, dilate the osseous opening with chisel or gouge, lay open the tuberculous cavity, remove its contained cheesy matter, and sequestra, and scrape or dig away the whole of the tuberculous, infiltrated tissues.

Cases in which the neighboring joint has been saved have been reported by Kocher after the foregoing operation was performed. (Zur Prophylaxis der fungösen Gelenkentzündung—[Volkmann Klinische Vorträge, No. 102.]

B.—THE TUBERCULOUS ARTHRITIS.

I.—*The Consecutive or Secondary Tuberculous Synovitis.*

When the osteo-tuberculous cavity opens into and empties part of its cheesy, infectious contents into the joint, a tuberculous inflammation results. In the great majority of cases this arthritis assumes, from the very beginning, the same chronic character as did the tuberculous caries of the epiphysis. This chronic, slowly-developing fungus arthritis has been termed pannous arthritis, from its anatomical resemblance to pannous inflammations of the cornea. The synovial membrane becomes injected and swollen, the articular cartilages replaced by vascularized granulations or connective tissue. In the cavity of the joint may be found an augmented amount of synovial fluid, somewhat whitish from admixture with lymphoid elements. Slight pain, impaired motion, moderate swelling, no palpable signs of effusion within the joint, and sometimes slight, muscular contractions are the symptoms met with in this condition.

This pannous arthritis may set in before caseous matter is effused into the joint (Volkmann and Kocher) from irritation produced by the tuberculous inflammation in such close proximity to the articular surfaces. As the pannous arthritis has a tendency to obliterate the cavity of the joint and to terminate in a more or less complete false ankylosis, it often happens, therefore, that the caseous matter opens into an already partially obliterated synovial cavity. If this be the case the reactionary inflamma-

tion will be far less vehement than if the cheesy matter entered a normal-sized and healthy synovial cavity.

The foregoing reasons account for the well-known fact that the fungous arthritis sometimes sets in with the symptoms of an acute inflammation; generally, however, it has a chronic character from the start. This chronicity may be interrupted by acute but transient exacerbations, to be accounted for by the cheesy matter as above stated.

The most serious consequence of this tuberculous arthritis is its destructive influence on the integrity of the affected joint. The articular cartilage or the periosteum disappears or is transformed into miliary tuberculous adenoid tissue, and the epiphyseal arthritis of the bones becomes destroyed by a carious tuberculous osteitis, extending from the surface to the deeper tissues of the bone.

The secondary tuberculous destruction of the epiphysis is sometimes uniformly distributed over the entire articular surface, whilst in other cases it is localized and forms shallow excavations. A specimen representing the latter condition is shown in Fig. 5.

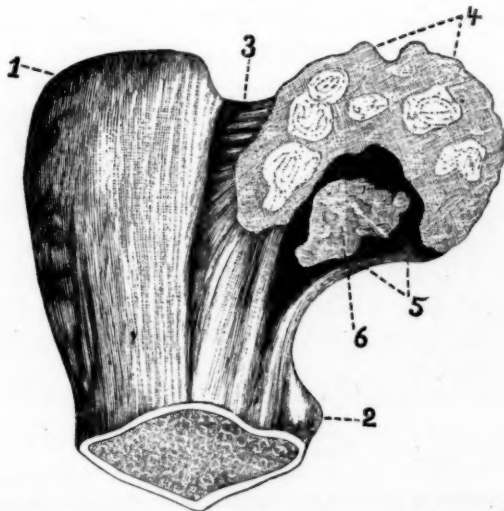


FIG. 5.—Upper extremity of the right femur removed by excision by Dr. E. W. Lee, from a six year old girl suffering from morbus coxarius with

a large anterior abscess. (The details of this successful operation will be published in another paper.) 1. The great trochanter. 2. The lesser trochanter. 3. The neck of the femur. 4. The head of the femur reduced to one-third its normal size, with irregular circumference and denuded roughened surface. 5. Tuberculous cavity in the head and neck, partially filled with 6. A mass of reddish-gray soft tissue—fungoid granulations—consisting of adenoid tissue with miliary tubercles.

This upper extremity of the right femur removed by excision by Dr. E. W. Lee, shows, besides considerable superficial destruction of the head, (4) a shallow cavity (5) two centimeters long, one and a half centimeters broad, and half a centimeter in depth, situated in the inferior portion of the neck and also in the head of the bone. This cavity is mainly filled with a mass of reddish-gray soft tissue—(6) fungous granulations—in which fine yellow specks or points are seen, but no gray miliary nodules are visible to the naked eye. The microscopic examination of this tissue shows it to consist of adenoid tissue and miliary tubercles.

In this secondary, diffuse and superficial tuberculosis of the bones—tuberculous periostitis, osteitis and caries—the osseous tissue is transformed into masses of reddish-gray soft tissue, viz., fungous granulations—hence we find in this tissue, situated between the adenoid tissue and the tubercles, spiculæ of bone undergoing the process of absorption.

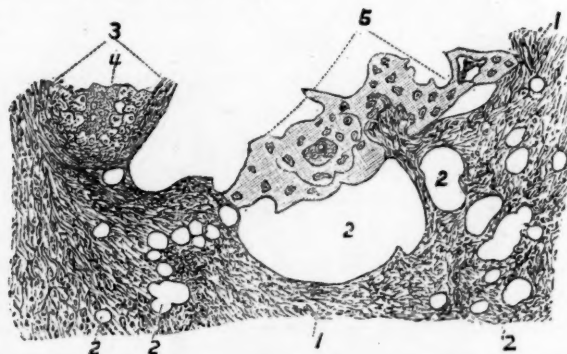


FIG. 6.—Miliary tuberculous fungous granulations from elbow joint. Excision by Dr. Lee for chronic fungous arthritis with impending ankylosis. No periarticular abscesses nor fistulæ. Old primary osteo-tuberculous cavity in the head of the radius. Secondary superficial tuberculosis of the olecranon and the lower extremity of the humerus. 1. Young connective

tissue of mainly adenoid character, with 2. Smaller and larger lymph spaces. 3. Half of miliary tubercle with the 4. Giant cell in the center. 5. Spiculum of osseous tissue.

In Fig. 6 is shown a section of fungous granulations covering the atrophied anterior surface of the lower extremity of the humerus. This was removed by excision of the elbow joint in a case of chronic fungous arthritis in Dr. Lee's practice. We find a young connective tissue, rich in cells and mainly adenoid in character (1) containing a number of variable-sized round empty spaces, with serous fluid filling the large lymph spaces. 2, 2, 2. At 3 is a miliary tubercle with a giant cell (4) in its center, and at 5 is an irregular island of osseous tissue (spiculum) with bone corpuscles surrounded partly by lymph spaces and partly by adenoid tissue.

This little spiculum of osseous tissue is part of the old bone in the stage of absorption, because in no part of its surface is found either osteoblasts or connective tissue—corpuscles or cells undergoing the process of transformation into bone corpuscles.

The effect of cheesy matter from a tuberculous cavity upon the healthy synovial cavity has been demonstrated by the experiments of Prof. Hüter* of Greifswald.

He made an emulsion of tuberculous sputa from consumptive patients, and then injected one-third to three-quarters of the contents of a common subcutaneous syringe into the cavities of the knee and ankle joints of five dogs. After eight to fourteen days swelling commenced in the joint, abscesses reached the surface and left sinuous openings, discharging a sero-purulent fluid. The animals became emaciated, and diarrhœa set in. One of the dogs died of acute general miliary tuberculosis. When the inflammation of the joint subsided, the general condition of the animals improved, he also noticed. In the joints of the animals which he killed was constantly found a condition of fungous arthritis in different stages. The fungous granulations of such a joint were emulsionized with water and injected into the peritoneal cavity in two healthy dogs. Four weeks later the animals

* Die Experimentelle Erzeugung der Synovitis granulosa an Hunde, und die Beziehungen dieser Gelenkentzündung zur Tuberculose, Deutsche Zeitschrift für Chirurgie Bd. XI Heft 3 und 4, Centralblatt für Chirurgie, No. 43, 1879.

were killed, and he found swelling of the retro-peritoneal glands, desquamative pneumonia in the lungs—consumption—miliary tubercles in the diaphragm and the pleural cavities. He therefore concluded that the fungous arthritis—the synovitis granulosa—is a tuberculous disease.

II. THE PRIMARY TUBERCULOUS SYNOVITIS.

A priori there is no reason why the tuberculosis should not commence in the synovial membrane of a joint as well as in the adjoining bones. But a priori theories or reasonings are of little account when compared with observations based upon facts. The numerous authentic cases upon which Volkmann founded his monograph made him enunciate the opinion that the synovial tuberculosis in the great majority of cases is secondary—caused by a communication being established between the primary osteo-tuberculous cavity and the joint. We do not doubt but that his statement is in strict accord with the facts observed by him.

Volkmann admits that primary synovial tuberculosis is a rare event, and thus far we agree with him; but when he further states that primary synovial tuberculosis occurs rarely save in adults, and calls for a much more serious prognosis than the common secondary tuberculous arthritis, we beg leave to differ with him.

In one of our cases, where, in tuberculosis of the knee-joint, excision was performed by Dr. Fenger, there was no primary osteo-tubercular focus to be found in any part of the bones.

In the hip-joint represented in Fig. 5, we feel inclined to regard the tuberculosis of the neck and head, of the femur as secondary on account of the shallowness of the cavity, but we admit that our opinion here might be disputed. An important step toward the solution of this problem has been made by the recent experiments of Shüller (*Centralblatt für Chirurgie*, 1878, No. 43 and 1879, No. 19, also *Archiv. für Experimentelle, Pathologie and Pharmakologie*, Bd. 11, Heft. 1 and 2, 1879; also *Allgemeine medicinische Zentralzeitung*, No. 82, 83, 84, 1879.)

The author being aware of the clinical fact that a slight trauma was often mentioned as a common factor in the etiology of the scrofulous, viz., tuberculous inflammations of the joints,

desired to settle the following queries: Why can such an unimportant traumatism—in children, almost of daily occurrence—produce, in a very limited number of individuals, such serious consequences; and what are the predisposing morbid conditions in the organism of the individual subject to such grave results? Clinical observations have long since pointed out the coincidence, to say the least, between fungous arthritis, scrofulosis and tuberculosis. Villemin had produced tuberculosis by inoculation, Tappeiner by inhalation of tuberculous and scrofulous cheesy matter. Schüppel had found miliary tubercles in the caseous, so-called scrofulous lymph glands. The latter sometimes suppurate and periglandular abscesses form; these as well as the chronic, cold or scrofulous abscesses, contain in the lining membrane of the wall thousands of miliary tubercles. (Volkmann.) Scrofulous ulcers of the skin so common in children, grave cases of scrofulous ozæna, a number of anal fistulæ, obstinate ulcers of the soft palate and the pharynx in children and young individuals, where the malignancy of the ulcers was attributed to hereditary syphilis or their lupoid character, show, according to Volkmann's investigations, that miliary tubercles are the cause of their local destructive tendency.

The identity of scrofulosis and tuberculosis was slowly approaching the condition of an established fact. The above named investigations caused Schüller to enter the experimental field relating to fungous inflammations of the joints.

Rabbits and dogs were infected with tuberculosis, viz., scrofulosis in the following ways:

a. Tuberculous sputa from consumptive patients, or an emulsion of cheesy matter and miliary tuberculous tissue from human lungs was injected by means of an hypodermic syringe, the point of which was pushed through the thoracic walls.

b. The same kind of emulsion was injected into the trachea through the wound of a preceding tracheotomy.

c. By means of an atomizer the same emulsion was thrown into a closed space containing animals.

Besides the emulsion of tuberculous sputa and caseous and tuberculous tissue from the lungs, the author used for the infection of the animals a fluid containing secondary generations of

micrococci, contained in the above-named material. The cultivation of these micrococci was produced in the following way: Miliary tuberculous lung tissue or cheesy matter from scrofulous glands was ground in a mortar in Bergmann's fluid for cultivating bacteria, thus forming an emulsion. Bergmann's fluid consists of 100 cubic centimeters of distilled water; 10 grams of rock candy; 1 gram of tartrate of ammonia, and $\frac{1}{2}$ gram of phosphate of potassium.

The emulsion is then filtered, and of this milky filtrate from one to three drops are put into cleansed glasses, containing Bergmann's fluid. The glass is kept at a temperature of 30° C., and after three to four days the fluid becomes cloudy or milky from generated micrococci, and the so-called first culture or generation is completed. One to three drops of this is mixed in another glass of Bergmann's fluid, and results in three to four days in the second culture or generation. In the same way a third generation is produced from the second.

The fluid contains a multitude of small, round bacteriæ in very rapid motion. At 450 diameters they are to be seen as small round points. At 800 to 1200 diameters, and colored with methyl-violet they can be distinctly seen as spheroidal bodies, isolated or in groups of two or three. The second generation contained only these bacteria in a fluid free from the cells or particles of the original tubercles or cheesy matter. This fluid was then used for injection into the lungs or for inhalation with the same effect as the original emulsion of tuberculous tissue and cheesy matter. Rabbits and dogs were used for the experiments. The dogs and the larger and more powerful rabbits tolerated the operation readily and the tracheotomy wound healed up without accident. The infected animals after some time would commence to lose weight and become emaciated, and in spite of their good appetite would die in the course of three to ten weeks from tuberculosis of the lungs and other internal organs.

Traumatic lesions were now produced upon the joints of the infected animals. In the great majority of them the result was a chronic fungous arthritis, a tumor albus, a pannous arthritis.

The synovial membrane became thickened and covered with granulations (these granulations will also cover the peripheral per-

tions of the cartilages), the cartilages thickened and became opaque, vascular, and finally transformed into the same kind of granulation tissue as found on the synovial membrane. The epiphyses of the joint became thickened and osteo-porotic, but no central carious cavity filled with cheesy matter was found in them. Towards the surface, however, in the enlarged medullary spaces was found an infiltration of lymphoid cells and consequent fatty degeneration. In and around those spaces miliary tubercles were constantly found. In the granulation tissue, in and on the synovial membrane miliary tubercles were found now and then but fewer in number and less frequently than in the medullary osseous tissue. Thus it was proved that a fungous arthritis of tuberculous character, a tuberculous synovitis commencing in the synovial membrane, was the result of slight traumatisms in animals infected with the tuberculous poison.

Deciding experiments were made in which the same traumatisms to the joints of non-infected animals were produced, and were not followed by any such chronic inflammation. A slight serous effusion or even extravasation of blood in and around the joint became absorbed in a few days, leaving the joint as healthy and movable as before.

The above experiments, together with the observed clinical cases where no primary local, osteo-tuberculosis is found after operation, tend to justify the opinion that *a primary tuberculous synovitis exists, not as a rare and grave disease as Volkman believed, but as one of the common forms of fungous arthritis*, that we so frequently meet with, resulting from slight traumatisms to the joints in scrofulous, *i. e.*, tuberculous individuals—mostly in children.

This primary tuberculous synovitis can further be a local tuberculosis as well as the osteo-tuberculosis of the epiphyses, as we have seen in our case of excision of the knee-joint, where the recovery is complete and the patient is growing stronger and gaining in weight, and not exhibiting the faintest signs of tuberculosis in any other organs of the body.

The relative frequency of the primary and secondary tuberculous arthritis must remain an open question at present, and will have to be determined by further clinical observations.

The practical bearing of the question is this: If the tuberculous arthritis, as Volkmann believes, is almost always secondary to a primary osteo-tuberculosis, we might hope in a large number of cases to be able to destroy the disease by local treatment previous to the extension of the disease to the joint. Successful cases of this kind are reported by Kocher and Volkmann, but up to a recent date their number was only small, and we must regard them as exceptional cases.

COURSE AND TERMINATIONS OF THE TUBERCULOUS ARTHRITIS.

The object of this paper being only, or mainly, to elucidate and demonstrate the pathology of tuberculosis of the joints, we will have to postpone the discussion of the details of the course, viz., symptoms, complications, etc., until a future occasion when symptoms, treatment and its results will be illustrated by authentic cases of the disease. In this paper, however, we shall only point out some of the main indications on general principles.

At present, we know not what proportion of the cases of tumor albus, white swellings, or fungous arthritides are complicated with or dependent upon a miliary tuberculosis of the affected joints. Future investigations will have to solve the question: Are tubercles present in every case of fungous arthritis, or, in other words, is every case of fungous arthritis a local tuberculosis; or, still further, does there exist two distinct classes of fungous arthritis, one tuberculous, and the other non-tubercular? From a pathological point of view this question is of vital importance as far as the prognosis is concerned, because a non-tubercular arthritis would be a benignant disease, not for the joint, but for the life of the patient, as there would be no danger of a general tuberculosis resulting therefrom. The investigations of Volkmann and Friedländer during the last years seem to prove that the great majority of the fungous arthritides are of a true miliary tuberculous nature. If this be the true state of things we shall have to change our inherited views of the malignancy of the miliary tuberculosis, and we shall have to admit that a local tuberculosis of a bone or a joint is so far benignant that it may terminate in a relative recovery, viz., in ankylosis of the joint without the necessity of involving a fatal general tuberculosis of

the lungs or any other system of organs necessary for the continuation of life.

It is now beyond doubt that a number of tuberculous arthritides terminate in what we used to call recovery, that is, a more or less complete fibrous or osseous ankylosis of the affected joint. It is further possible that this recovery may be a complete one as to the tuberculosis, viz., that all the tubercles in the fungous arthritis have disappeared, and the tissues of the ankylosis consist of fibrous and osseous tissue apt to persist for an indefinite period of years without any danger, either from future local inflammation or from general tuberculosis.

A very interesting point in Schüller's experiments we wish to mention in connection with this side of question. Consequent to the experiments with the bacteria developed in Bergmann's fluid, Schüller raised the question whether or not antidotes of anti-bacteriac remedies would not show a beneficial influence upon the tuberculous infected animals. He pretends to have found that inhalations of a five per cent. watery solution of benzoate of soda thrown into the respiratory tract by means of atomizers was effective, sometimes curing and always ameliorating the condition of the tuberclosed animals. Under this treatment they gained in weight, the tuberculous arthritis got better and, if not too far gone, disappeared entirely.

How common this complete recovery is we do not know at present. But we shall here point out and demonstrate the fact that the recovery from a tuberculous arthritis may seem complete for years and still hide the germ of a finally fatal tuberculosis.

Fig. 7 shows an ankylosed hip joint, removed at a post mortem examination of a man about thirty-five years old, who died in the Cook County Hospital from chronic pulmonary tuberculosis, *i. e.*, consumption. The patient, when about fifteen years old, had suffered from morbus coxarius which had terminated in an ankylosis and left him a relatively useful limb, on which he was able, in spite of the false position—flexion almost to a right angle with the perpendicular line of the body—to walk or limp around for a good many years. We find, as is shown in the figure, a tuberculous abscess filled with cheesy mater, situated on the pelvic surface of the corpus ossis ischii.

This abscess communicates with two osteo-tuberculous cavities; the upper one in the acetabular portion of the os ischii, the other in the atrophic head of the anchylosed os femoris. Still lower in the head of the femur is another small, round, tuberculous cavity (13) that has no communication with the above described ones. This local tuberculosis of the hip joint and its surrounding bones was the primary disease. The arthritis terminated in an anchylosis. The tuberculous cavities, filled with cheesy matter and lined with a membrane containing thousands of miliary tubercles, remained for a long series of years harmless, but finally were the source of an infection from which emanated the fatal tuberculosis of the lungs.

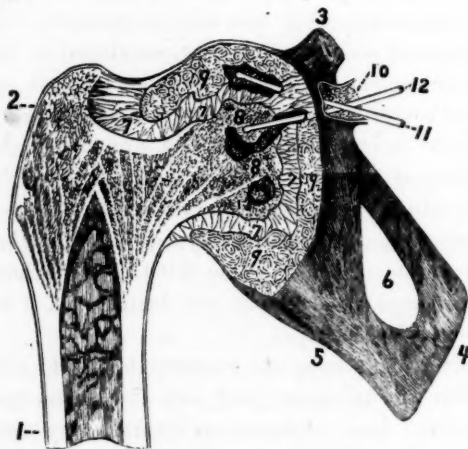


FIG. 7.—Anchylosed hip joint. The femur in a degree of flexion, forming a right angle, 90° with the perpendicular axis of the body. 1. Shaft of femur. 2. The trochanter major. 3. The spina ossis ischii. 4. The symphysis ossis pubis. 5. The ramus horizontalis ossis pubis. 6. The foramen obturatorium. 7. Firm fibrous [tissue filling up the former cavity of the joint, uniting 8. the remnant of the atrophic head of the femur with 9. the bony walls of the irregularly excavated cavity of the acetabulum. 10. Tuberculous abscess, viz, cavity filled with cheesy matter on the inside of the os ischii in the cavity of the pelvis minor. 11. Probe leading through this abscess into a tuberculous cavity in the os ischii on the inside of the former acetabulum. 12. Probe leading through the abscess into a tuberculous cavity in the anchylosed head of the femur. 13. Isolated miliary tuberculous abscess or focus in the head of the femur.

The tuberculous cavities in the bones, in these cases, and the tuberculous abscesses around the bones keep the patient in constant danger of a general tuberculosis in the vital organs of the body. How long a period—how many years the local tuberculosis will remain latent we do not know. Neither do we know the circumstances or causes under which the tuberculous poison from those hitherto quiet foci spreads out from its local seat into the organism and causes either an acute miliary tuberculous meningitis of the base of the brain, or an acute miliary tuberculosis of the lungs, or a chronic tuberculosis of lungs, genito-urinary organs, peritoneum, etc.

We now very naturally have to ask the question: Will this new light thrown upon the cause and nature of fungous arthritis have any influence on the treatment? Will we have in the future to operate on cases in which we before trusted to an expectant and less bloody means of cure? We must answer the question in the affirmative, but at the same time warn against an unlimited cutting away, regardless of results, of every particle of tuberculous tissue of the local tuberculosis, in view of avoiding a fatal generalization as unnecessary and not indicated. It certainly was for many years a *pium desideratum* to be able to cut away old cheesy deposits in lungs and bronchial glands, as the pathologist saw in numerous cases the deadly general tuberculosis start out from these very places. In later years this *desideratum*, to prevent general infection, was partly realized by removal* of cheesy glands from the neck, and scraping out of scrofulous ulcers with the sharp spoon. But as we learned to know the true tuberculous character of a great many of the so-called scrofulous inflammations, cheesy glands, sores and fistulæ, some varieties of lupus, we were obliged to give up part of our inherited dread of miliary tubercles, knowing that a number of the last named local tubercloses heal up without operation and without being followed by fatal general tuberculosis.

The still considerable number of cases where the local tuberculosis leads to a fatal generalization compels us to operate where

* Hüter: Die Scrofulosis und ihre locale Behandlung als Prophylaxe gegenüber der Tuberculose. Volkmann Klinische Vorträge Chirurgie No. 15.

the removal can be effected without danger to the life or any considerable destruction of the part affected.

The frequency of a primary osteo-tuberculosis, as the cause of the fungous arthritis, demands a minute and constant watching of the initial stage of the disease, and as soon as we may be able to make the diagnosis of the affected locality of the bone, we will have to proceed to its removal by gouge, trephine and curette, etc., or its destruction by red hot iron (Kocher.) It is completely useless in these cases to lose time by relying on the application of external remedies, even down to actual cauterization, though the whole thickness of skin and subcutaneous tissue be destroyed by the same. They will have no effect at all upon the local tuberculosis in the interior of the bone, and this will proceed undisturbed on its way toward the destruction of the joint.

Further, we shall have to make a change in the old indications for resections—excisions—of the joints. The majority of surgeons have been used to make the excisions late, often too late, in the course of the disease. We were accustomed to require discharging fistulæ, or palpable periarticular abscesses, besides crepitation on motion of the joint, which latter means a carious destruction of the articular surfaces. Now we find in a number of cases of extensive tuberculous destruction of the epiphyses and fungous destruction of the synovial membrane, no fistulæ, no abscesses, no crepitation on moving the joint, and nevertheless the excision strongly indicated, as shown by the records of the knee case, (Fig. 4) which we have before mentioned. In a case at Cook County Hospital, where a successful excision of the knee joint was performed by Dr. Isham, there were no fistulæ, no abscesses, and only slight swelling of the joint.

The boy had for years been unable to use the limb, on account of pain in the joint. There was some angular deviation outwards and some lateral mobility owing to destruction of the internal lateral ligament. The exsection revealed, besides a fungous arthritis with partial destruction of the articular cartilaginous surfaces, a tuberculous cavity filled with cheesy matter in the upper epiphysis of the tibia, extending down below the cut

surface of the latter. The exsection combined with *évidement* of the lower part of the cavity, and drainage through a drilled opening through the anterior surface of the epiphysis, affected a complete recovery viz., an ankylosis with a useful limb.

As we have already pointed out, we must leave the details of indications for operation, and details of symptoms and course for future clinical records of cases, which will be published as a continuation of our present paper. We shall here only mention the two main points for consideration, before we resort to excision of a joint.

The first is, we require as the probable result of the operation, a more useful limb for the patient than he had before the excision, or probably would have within a reasonable time without surgical interference.

The second ; we insist and expect, in removing the tuberculous joint to free the patient from an ever-existing source for general tuberculosis—a sword of Damocles hanging over and constantly menacing his very life.

The larger the quantity of cheesy matter, the less the possibility of a speedy absorption of this infectious substance, the greater will be the importance of the second point as an indication for operative interference.

But the whole modern tendency towards conservatism in surgery demands that the question of general tuberculosis be put second to the question of the function of the joint or the limb. In deciding otherwise we would run a risk for an uncertain gain, the percentage of which is as yet not known, in operating on cases where non-interference would give as good results with less, or without temporary danger to the life of the patient. Future observations will have to determine the relative weight of these two main factors in the indications for operative interference.

It will only be through numerous carefully-observed cases that future surgery will be able to decide upon the best course of procedure in each single instance of the disease in question.

We would be glad to hope that our paper of to-night may bring numbers of the profession here to participate in the further development of our knowledge to, and in the solution of the main questions regarding the miliary tuberculosis of the joints.

ARTICLE IV.

RÉSUMÉ OF WORK ON "EPILEPTIFORM SYPHILIS." By DR. CELSO PELLIZARI, of Florence.

In the first place I propose to call "epileptiform syphilis" those complicated phenomena which produce that form of convulsions which, until now, have been designated under the names of "hemiplegic epilepsy," "epileptic hemiplegia," "muscular spasms." Most all the authors have agreed to comprehend under the name of "syphilitic epilepsy" all the convulsive forms which depend on syphilis. Others, after the denomination of "spasms muscular," given by Tach to these convulsive phenomena, have said that the *tout ensemble* of phenomena did not deserve the name of epilepsy, as there were lacking some of its characteristics. The names of "hemiplegic epilepsy," "partial epilepsy," "epileptic hemiplegia," "hemi epilepsy," etc., comprehend only particular forms, and therefore cannot comprehend them all. As these convulsions manifest themselves always with the form of attack which gives an immediate idea of the epileptic fit, I have proposed the name of epileptiform syphilis, which, in my judgment, is better suited to the said disease, as whatever may be the form, the attack is always there, and gives at once the idea of epilepsy.

Case 1. A man 38 years old was admitted in the hospital of San Maria Nova, on the 24th of May, 1878, on account of convulsions, which had not left him for some days. He had had syphilis 16 years before, and bore marks on his body which were, beyond any doubt, those left by syphilitic sores. As to the convulsions, he had had the first in July, 1877, while at work. Taken to the hospital then, they had applied ice upon his head, and the attack did not return. From that time until the 20th of May, 1878, the patient had no more convulsions, only he complained of general weakness and dizziness. The 20th of May he was taken by dizziness, which continued till the 22d. In the night of the 22d to the 23d he had two convulsive attacks. In the following night the convulsions occurred five or six times ;

on the 24th the attacks became more numerous, and the patient could give no account of himself whatever. The convulsions had always the same form, and were *unilateral*. The attack was in form of partial epilepsy. The patient began to open the eyelids and roll his eyes towards the left. The left angle of the mouth was strongly drawn one side; therefore all the left side of the face felt the convulsions almost contemporaneously; the patient extended the left arm, closed the fingers, and the thumb remained pressed between the fore finger and the third finger; the cyanosis succeeded very soon, and the convulsion was at an end. During the attack there was involuntary emission of urine and of feces. During the first night of his stay in the hospital the patient grew considerably worse; the next day (25th) continued to have the attacks stronger, and more and more frequently. After the convulsion he went into a profound drowsiness, from which it was impossible to bring him out. Treatment with the frictions of (5i) 4 grams of the mercurial salve, and a potion with (grs. xlv) 3 grams of iodide of potassium was begun at once. Leeches were applied, and also a bag of ice which was placed on his head permanently; however, all was useless, and the patient died at 10 a. m. on the 26th. The convulsions had grown worse in frequency and intensity; an augmentation of temperature was visible during the last 30 hours, but until then had been natural all the time. The diagnosis was that we had to deal with a gummy pachymeningitis of the excito-matrix zona of the right, admitting, however, that an exostosis, or a gumma of the cortical substance could have given the same phenomena; let us add, besides, that probably to the specific form was added an acute attack of inflammation, which alone could account for the hasty death of the patient. In fact, at the autopsy the dura mater was found stretched, and the meningeal media dilated with liquid blood. Against the right frontal lobe of the brain, very near the orbital plane, the dura meningia was soldered with the cerebral substance to the extent of the size of a piece of 5 francs. The adhesions were so tenacious that they could not be detached without a knife; in the middle of the adhesions were found, here and there, small bony and calcareous formations. The cortex of the brain in this spot was, to a great extent, destroyed, and its place taken by well-or-

ganized connective tissue. In the spaces under the arachnoid was infiltrated a small quantity of clear serum. The pia mater did not peel nicely from the convolutions. On the left, between the second and third frontal convolutions were noticed two small osteomata, and in the middle of the second convolution a small nodule as brilliant as a raw tubercle, which made a slight protuberance on the surface. The nervous cerebral substance appeared a little more consistent than usual; in the annular protuberance was a grayish spot, occupying the inferior segment of the right cavity. The veins were swollen and full of blood; however, the vessels did not show any alteration of their walls. Besides these alterations, there was disease of the tibia, and gummy nodules of both testicles.

In my pamphlet I have talked at considerable length upon certain considerations, in order to prove that there is not another disease besides syphilis which could present such a clinical and anatomical table. Then I gave my second observation, as follows: A boy aged 8, born of syphilitic parents, who had himself been under treatment at various times for congenital syphilis. This boy was taken to the hospital of S. M. Nova on the 26th of November, 1878, on account of convulsions, which had occurred daily for about ten days, but only affected the left side of the body. The specific treatment, with mercurial frictions and iodide of potassium internally, gave great improvement; the fits became much less frequent, and the child began to walk about the ward. All was apparently going well, when the patient was suddenly taken with typhoid fever, and died in a few days, that is to say, on the 28th of December.

Post Mortem: The skull and dura mater were found quite healthy, as was also the pia mater, except opposite the right paracentral lobe, where it was a little thick and opaque. There was slight wasting of the brain substance. No gumma nor tubercles were found. At the upper part of the right lung was a circumscribed patch of pneumonia, surrounding a cicatrix, which seemed to be that of a by-gone gumma. The liver presented a deeper cicatrix on its convex surface. In the intestines, clear evidence of typhoid fever was found in Peyer's glands. Taking into consideration the ideas of well-informed writers, I believe

that the slight alterations, found at the autopsy, are not without some worth. In fact, the autopsy only showed what the clinic had declared it to be; that is, the child cured of convulsions, and dying afterwards of another disease. As the treatment was successful in making the convulsions disappear, it ought, also, to have destroyed the material cause, as well.

My third observation is a man of 36 years. He entered the syphilitic clinic of Florence on the 5th of February, 1879. His mother had suffered from convulsions of epileptic form for twelve years, which had begun with the fourth confinement. The patient was born during the interval of these twelve years, but all his youth was passed in perfect health. He had been treated in the said clinic for syphilis by Prof. Pietro Pelizzari (my uncle) in 1863; in 1877 he began to have pains in the head, which did not have a very decided nature. Shortly after the pains had begun, a kind of ulcer showed itself on the inferior lip, for which he was ordered alteratives. In three months the sore was cured, but the pains, although weaker, continued. In this condition he went till March, 1878. The 7th of the month he began to stammer and feel faint, without, however, losing consciousness. Ten minutes later he was taken by a convulsive attack. In the same day he had another attack, and it was reported, with loss of consciousness. They gave him bromide of potassium and nux-vomica, but the convulsions continued with phenomena of amnesia. The convulsive fits were always partial, only the right part of the body entered into convulsions. The fits, which were always preceded by stammering, and which did not deprive him of consciousness, had intervals of fifteen to twenty days, but when they occurred, they were more numerous. In October, having had stronger fits, and some tubercles having appeared in groups and ulcerated on the right thigh, he went to Prof. P. Pelizzari, who, determining it to be a specific cerebral affection, ordered the treatment, with the frictions of (3j) 4 grams of mercurial salve, and iodide of potassium, from (3j-3ss) 1 gram to 2½ per day. Under this treatment the sores disappeared and he was free from convulsions for two months. Towards the end of December the convulsions reappeared (he then came to Florence, when I saw him for the first time), but with these a weakness of intellect and

of muscular power was visible; there was paresis of the right arteries and a slight deviation of the tongue towards the right. The iodide of potassium helped him considerably, and put a stop to the convulsions. On the evening of February 2, 1879, having drunk of wine and smoked too much, the patient was again taken with convulsions. The fits, which at first occurred every hour, grew so numerous that, on the 4th, when I was called in to see him, they did not leave him ten minutes at a time. The fits, which lasted one minute or a little more, were still limited to the right half. The patient was quite prostrated. The 5th of February, when taken to the hospital, he was in such a condition that it was impossible to get one word out of him, and the attack had lost its unilateral type. There was no fever. The diagnosis of the clinic was that of meningitis-gummosa in the left occipital zone. The treatment was: Frictions with mercurial salve, (5j) 4 grams; iodide of potassium, (5j) 4 grams. Applications of ice upon the head permanently. Having obtained no improvement, the following day the ice was taken off, in order to make a revulsion by applying a blister on the neck and sinapisms to the inferior extremities. Under this treatment there was a slight improvement, which lasted about two days. On the morning of the 10th he was much worse; was taken with strong fever, the convulsions increased in frequency, and were general. Death occurred on the 13th of February, in the evening.

Post Mortem: The dura mater, on the left, appeared more opaque than on the right, although at that side there was a spot where it was thicker. Nothing morbid was found on the right. On the left nothing morbid appeared corresponding to the occipital lobe, but towards the frontal lobe the dura mater was found adhering to the under membrane, beginning at Rolando's furrow. These adhesions were not strong for a short space, but in correspondence with the frontal convolutions, were so tenacious that it was impossible to detach the dura mater without lacera-ting the nervous substance. These adhesions were found to correspond to the first, second, and third frontal convolutions, beginning from their orbital extremity, and existed even upon the inter-hemispheric side of the first frontal. However, the posterior extremity of the third frontal, or convolution of Broca,

was not included in the area of the tenacious adhesions. In correspondence with the same, and with the ascending frontal, the adhesions could be broken with the finger without laceration of the cerebral substance. The nervous substance of the left frontal lobe was softened, diffuent and white. The softening destroyed the cortical substance and the oval center corresponding to all the first and second frontal, and of the anterior two-thirds of the third, deepened to the external capsule, which seemed intact to the naked eye. Near the base of the third frontal, and of the ascending frontal, the pia mater detached itself with difficulty from the cerebral surface, and there the cortical substance was of a pinkish lavender. The cerebral arteries were sound. No alteration of the viscera of the chest, nor of the abdomen. Although the mother had conceived him while she was epileptic, it was difficult to believe that he was affected by hereditary epilepsy. In fact, in this case, the convulsions would have been determined when he developed, but not that special form, nor with these alterations. I believe firmly that the patient died of cerebral meningitis, which was due to syphilis, and I don't think it possible to attribute it either to alcoholism or to a thrombus.

In the second part of my work, I speak of epileptiform syphilis in general. As to the etiology, I believe that epileptiform syphilis develops itself rather more in those syphilitics who have an hereditary disposition, but, among the other causes which help in developing that disease, are wounds of all kinds, abuse of mental fatigue, alcohols, and "pleasures of Venus," as the Italians term it. That form of cerebral syphilis may occur at all ages. Le Pileur tells of a case of epileptic convulsions from syphilis in a child one month old. In our three cases we find a patient of eight, and another of thirty-eight. The time which elapses from the syphilitic infection to the determination of the fits, varies from some months to sixteen years, in the cases known till now. I do not think that it is possible yet to determine whether this form of convulsions comes sooner in those who have not used mercury, or in those who have abused it, or those who have used it moderately. The statistics in medicine are not precise enough. The anatomic alterations, which generally cause the epileptic form are several. The alteration of

the bones of the cranium may determine the different convulsive forms, either directly, with exostosis, which exercises compression upon the cortical, or indirectly, when they are caused by meningeal affections. The gummy form of the meninges is admitted by every one to be the most common alteration in this disease; it may be circumscribed to a tumor or diffused. The disease of the brain, and in particular of the cortex, may even cause the convulsions. Finally, as to the parts which have the essential alterations, in this disease, there is still some doubt; some authors admit that even the alteration of the vessels alone may occasion epileptiform syphilis (I speak of it in my work on cerebral disorders). I don't believe the following question well answered yet, that is to say: "Where are to be found the lesions which may give origin to the epileptic convulsions?" I am rather inclined to admit, with Charcot, that in partial epilepsy, the alteration ought to reside at the surface of the frontal convolution and *ascending parietal*, or, at least, in their immediate vicinity. Are these convulsive fits always the expression of a material lesion, or is there also an epileptiform syphilis *sine materiâ*? I believe that conclusive observations upon epileptiform syphilis, in which the autopsy has not shown any alteration, *do not exist*; but I believe that alteration of the blood and of the lymphatic system when infected can have the power in certain persons and in special conditions to give place to convulsive fits of itself. I do not deny epileptiform syphilis *sine materiâ*, but I want it restricted to a very few cases. At all events, these discrasic forms cannot correspond absolutely to the common one. They must have a great variability of *seat* and of form, and they must be quite brief; in these the fits will not repeat themselves with so much persistence, will not have so significant a form, and will not be so limited to any one part of the body, and will never be followed by paralytic phenomena, which persist after the convulsions. The only protean forms of specific epilepsy which may have value in practice in preventing a fatal result, are the cephalalgæ, which, although they do not always take place, occur in the greater part of cases, and sometimes appear many months before the convulsive attack. Their characteristics would be persistent, and localized in the forehead. The character of the fits is not always the

same; many times they are preceded by something out of the ordinary course, such as a fixed pain in a finger, a feeling of pricking like stinging of ants, of noise in the ears, of trouble in the eyes, of chills, muscular trepidation, of gasping, etc., which give the patient to understand the convulsion is coming. It may be general or partial. It is, however, oftener partial than general, and also, in the cases in which the convulsions become general, the prevalence in one part still remains. The length of time that the attacks last is much varied, as also is their number. The entire loss of consciousness occurs seldom with these fits. Among the morbid remains of the convulsions are noted: fatigue and deep prostration felt by the patient; paralysis, alteration of the sensibility, and finally intellectual disturbances, which may oscillate from simple diminution of the memory to dementia. The diagnosis of epileptiform syphilis is pretty difficult, and on account of it, the physician must not content himself with studying the attack as long as it has no special patronymic symptoms, but he will have to notice very carefully the other syphilitic alterations which may accompany it, the age of the patient, and, above all, work with zeal and patience to find out and put in evidence the pre-existence of syphilis. Another most important item is the ensemble of phenomena presented by the patient rather than that of a separate symptom; that is to say, of the convulsions, the form in which they develop themselves, the way in which they show themselves, and the prodromata which accompany or follow them. Finally, the physician may also be helped by the therapeutic judgment, which may be had, also, when we see the patient for the first time, when he has suffered beforehand from the common phenomena which precede the convulsions, as, for example, cephalalgiae, dizziness, etc., and has been cured of them by specific treatment. The prognosis is serious, however its dangerous nature may vary, according to the alterations which are supposed to have caused these convulsions, and according, also, to the time that the sickness lasted, since, in the greater number of cases, the short duration of the symptoms indicates relatively the slight intensity of the material alteration. As to the cure, I beg my readers to observe that it is not as easy as it might seem to be. After

having fought the ideas of those who admit the tardy forms due to the mercury, instead of to the syphilis, I do not deny that the remedy, taken in exaggerated doses, or in certain organisms, may produce some trouble in the cerebral tissues. In general, I do not approve of the energetic mercurial treatment for slight phenomena, whether of the skin or of another system; I neither approve of too prolonged treatment. I prefer to do it little by little, at intervals, giving, for example, mercurial preparations for ten days, and for the ten following days, iodide of potassium; after the last, leaving the patient for a week or two without any medicine, and this in order to prevent the accumulation of mercury in the organism. This is also the method I prefer for cerebral phenomena which have shown themselves for some time but slightly. Of course I know this ideal treatment cannot be put in practice in cerebral syphilis, but, occasionally, with a patient who has attacks daily, without intermission, the treatment must be made with the most powerful means; frictions with (5j) 4 to 5 grams of mercurial salve, or with hypodermic injections, united with the iodide of potassium, in a dose of (5ss-j) 2, 3 to 4 grams, and sometimes more, daily. There may be, also, some difference in the cases where it is necessary to act energetically. For example, in the time nearer infection, it would be necessary to confide more in mercury than in the iodide of potassium; but the contrary, when the patient has used mercury freely and a good deal in a short time. In cases where there is supposed to be an exostosis by condensing osteitis, as of the fibroid form of the meninges, or, of the tunics of the vessels, it will be necessary to use mercury sparingly, and give, on the contrary, much importance to iodide of potassium prolonged. The most energetic mercurial and iodide treatment will be made, when there will be reason to think of the real gummy form, especially in the cerebral substance. Certainly it is very difficult to say, if, to the specific alteration, there be added a simple inflammation or a softening; but when the diagnosis can be made, it is the duty of the physician not to insist on mercurials. In this case I believe that an accumulation of mercury in an organism may contribute largely to accelerate death. It has been noted how, in epileptiform syphilis, the iodide of potassium, after some time, had no more

effect, and that bromide has been an excellent substitute. Finally, the physician must recollect that, besides the remedies called specifics, there are others which may be required by the acute and decidedly phlogistic phenomena, by the severe reflex irritation, by the state of drowsiness, by the posture, etc., which may have occurred, and these remedies are: ice, bleeding, sedatives, excitants, hydrotherapy and electrotherapy.

ARTICLE V.

THE VALUE OF SALICYLIC ACID IN THE TREATMENT OF RHEUMATIC DISEASES OF THE EYE. By F. C. HOTZ, M.D., Chicago.

The beneficial influence of salicylic acid and its salts upon rheumatism has been so often attested that it would be superfluous to write another line about its anti-rheumatic action. But, judging from the scarcity of published reports and from my own observations of practice in eye clinics, I am inclined toward the belief that in the treatment of rheumatic affections of the eye, the salicylates have not yet won the general recognition they justly deserve. The local changes in the eye receive such exclusive attention that the influence of constitutional disorders is often overlooked. In the treatment of iritis, particularly, we are accustomed to rely upon the effect of local medication to such a degree that the use of constitutional remedies is seldom suggested unless syphilis is manifest or suspected.

I would not have it understood that I do not regard these local remedies of paramount importance. I admit that many cases of acute iritis have been cured by the use of atropine together with the proper care of the eye. But occasionally we meet with a case which does not seem to do well, although the atropine develops its full effect upon the iris; the pupil is completely dilated; there are no adhesions between the iris and the anterior capsule of the lens; and still the inflammatory symptoms persist in undiminished severity and the pain about the eye does not abate. It is in such cases that a more careful inquiry may often disclose

some constitutional disorder and the use of proper constitutional remedies will be of great advantage.

I will illustrate this point by the following two cases :

1. *Acute rheumatic iritis, severe supra-orbital neuralgia, readily relieved by salicylic acid.*

Geo. W. A——, æt. 42, engineer, presented himself, October 6, 1877, at the Illinois Charitable Eye and Ear Infirmary with all the symptoms of an acute iritis of his right eye, to wit, intense peri-corneal injection, discoloration of the iris, contraction of the pupil, posterior synechiæ and violent supra-orbital pain. The patient had never been troubled with sore eyes, never had syphilis, but had several attacks of rheumatism. His eye had been inflamed two weeks.

Oct. 20.—Although all the posterior synechiæ are broken up and the pupil fully dilated by atropine, the pericorneal redness and supra-orbital neuralgia persist; the pain being particularly violent toward night. Salicylic acid, (gr. iij) 0.25 every two hours.

Oct. 27.—After he had taken ten powders, his head felt quite relieved; and he has been free from pain ever since. Pericorneal injection greatly reduced.

Oct. 30.—No return of the neuralgia; eye free from all inflammation.

2. *Acute Iritis; persistent neuralgia readily relieved by salicylate of soda.*

John McG——, æt. 24, sailor, presented himself at the dispensary of the Eye and Ear Infirmary on February 23d. He had been treated at some other dispensary for an acute iritis of his right eye; but, though the pupil was fully dilated by atropine, the eye was intensely red and painful, the pain being particularly severe at night. Atropine was continued and salicylate of soda given internally.

Feb. 25.—Had no pain last night.

Feb. 28.—Eye continues to improve.

March 15.—Cured.

It seems to me the history of these cases forces upon us the conviction that the earlier administration of the salicylates would have materially shortened the duration of the malady. I had been so impressed by these observations that ever since I have been in the habit of prescribing salicylate of soda in acute iritis

when I could discover or suspect a rheumatic diathesis in the patient, just as we would give mercury in iritis when we have reason to believe it to be the local manifestation of constitutional syphilis. And I believe that by this practice iritis has been arrested in its incipiency in some cases and perceptibly shortened in others.

The following cases are instances of this kind.

3. *Acute iritis of left eye; rheumatic history; recovery in one week.*

Mr. H. B——, æt. 50 years, saloon-keeper, had ten years ago a severe attack of articular rheumatism followed by an inflammation of the left eye. This inflammation lasted four weeks, but finally passed away without injuring the sight. On February 21st he came to my office, stating that two weeks previously his left eye became red, painful and sensitive to light; the pain varied a good deal sometimes being quite severe, sometimes scarcely perceptible, but the intermissions did not show any regular periodicity. I noticed a marked redness around the cornea, iris somewhat discolored and dull, pupil small and ragged under the influence of atropine, owing to numerous posterior synechiæ. By the continued use of atropine and the internal administration of sod. salicylate (gr. ijss) (0.20 every two hours) the posterior synechiæ were quickly broken up, and the eye recovered so fast that on February 28th there was not a trace of inflammation left; pupil was clear and regular, iris bright, and no pericorneal redness.

4. *Incipient rheumatic iritis arrested by salicylate of soda.*

Mr. B. P. Q——, æt. 27, traveling clerk, has had several attacks of rheumatism and is very liable to catch cold. Four days ago, while traveling, he stepped from the overheated coach upon the platform in order to cool off. The air was very damp and chilly, and he attributed to that exposure his present trouble. For the next day his left eye became red, painful and sensitive to light. On March 4th, when he consulted me, I found all the symptoms of an incipient iritis (pericorneal redness, contraction of pupil, slight discoloration of the iris, lachrymation, photophobia and pain). I prescribed atropine for the eye and, on account of the rheumatic diathesis, salicylate of soda, (gr. iij) 0.25 every two hours. Two days afterward the patient called again. He had taken twelve powders when the buzzing in his head made him discon-

tinue their use. But his eye had improved so rapidly that it was practically well at this second visit. The pupil was regularly and fully dilated, the iris clear and bright, the pericorneal redness had disappeared and lachrymation and pain subsided.

The instances here reported are selected from a number of similar observations. I preferred to relate a few specimen cases, rather than to fatigue the readers by a long series of cases, because, in view of the well-established value of the salicylates as anti-rheumatic remedies, these few cases are sufficient evidence to show that the salicylates can be as valuable agents in ophthalmic practice as they are in the hands of physicians. For the same purpose I will add two cases of rheumatic paralysis of the ocular muscles, in which the salicylates affirmed their anti-rheumatic power.

5. *Complete paralysis of the right oculo-motor nerve; rheumatic origin; recovery by salicylic acid.*

Mrs. D—, æt. 29, came under my care at the dispensary of the Eye and Ear Infirmary on September 15, 1877. She had repeatedly suffered from rheumatic inflammation of the knee-joints and from neuralgia of the forehead. Four weeks ago she was seized with a very violent attack of neuralgia over the right eye; it lasted three days and when it subsided the right upper eyelid drooped so much that she could not see out of that eye. This condition persisted without change, although she tried a variety of remedies. I found complete ptosis of the right upper lid, due to paralysis of the levator muscle; and upon raising the paralyzed eyelid, I observed a marked degree of divergent strabismus of the right eye. And it was easily shown that this divergent strabismus was caused by paralysis of the internal rectus muscle, for the patient was unable to turn her right eye toward the left side. In fact, the eye was almost immovably fixed in its position, with the cornea turned toward the external canthus because not only the internus but also all other ocular muscles (superior and inferior rectus, inferior oblique and sphincter pupillæ) dependent upon the third (oculo-motor) nerve were paralyzed.

The patient was at once put upon salicylic acid, (gr. iij) 0.25 three times daily; and by the 30th of September the muscles of her right eye had recovered so much that she could open it and turn it in every direction just as well as the left eye.

6. *Rheumatic paralysis of the motor-oculi nerve; rapid recovery by salicylic acid.*

Mrs. Carrie Cl——, æt. 32, consulted me on October 10, 1877. Two weeks previously she had stood in the draught of the damp, cold air while her head was wet with perspiration. On the following day she had a violent neuralgia in the left side of her head, lasting three days. When it subsided the sight of her left eye became dim; then she saw everything double and finally the left upper lid dropped down over the left eye so that she could not see out of it at all. This condition had lasted ten days without any perceptible change.

I found complete ptosis of the left upper eyelid; complete dilatation and immobility of the pupil and complete inactivity of the superior, inferior and internal recti and the inferior oblique muscles. In other words, all the ocular muscles supplied by twigs of the oculo-motor nerve were paralyzed. Quinine and salicylic acid, (gr. ij) 0.15 of each, was ordered to be taken every three hours.

Oct. 22d.—The left upper lid can be elevated quite well; left pupil contracting, though still slightly larger than the pupil of the right eye. A faint trace of contractility in the superior and inferior recti.

Oct. 27th.—Marked improvement in the action of the upper and lower recti; only the internus is still totally inactive.

Nov. 7th.—To-day the internus shows a decided improvement. The eye can now be turned in every direction but its rotation toward the right side is still insufficient.

After this date the patient discontinued attendance, so that I have not any direct evidence of her complete recovery. But the fact that she did not return after having improved so fast, may be accepted as a reasonable ground for believing in her recovery.

ARTICLE VI.

A NEW SURFACE THERMOMETER. By DANIEL R. BROWER, M.D., Chicago.

That the surface temperature varies with the change in the nutrition of the parts beneath, is a fact beyond question, and if we can establish a standard of variation for different disturbances of

nutrition, we will have in this a valuable aid to diagnosis. To make these observations useful to the busy practitioner the instrument used for the purpose must make rapid and accurate records.

The original surface thermometer as devised by Dr. Seguin is unreliable because, as is well known, a moderate pressure, made upon the bulb will alter the height of the column of mercury one or two degrees—the maker aiming at rapidity, sacrificed accuracy. Dr. L. C. Gray obviated this difficulty by having the bulb made so heavy that ordinary pressure would make but little alteration in the record—but this extra thickness of the glass makes a much longer time, necessary for a correct observation. This instrument should remain in situ about fifteen minutes.

A new instrument was therefore demanded with which an accurate observation could be made in a shorter time, and this seems to be well accomplished in the thermometer, recently sent us by Messrs. Sharp & Smith of this city, made by Hicks, of London.



It is well represented in the accompanying cut. The bulb is peculiar in its construction. Instead of being flat, as in the Seguin instrument, or elongated as in the ordinary one, it is made of a slender glass tube coiled upon itself three times—exposing a large surface of mercury to the body in such a shape that pressure makes no impression upon the column. The stem has a contracture as in the ordinary thermometer to prevent loss of the index. This stem passes tightly through a rubber diaphragm that serves to keep the coil closely applied to the surface. The coil and diaphragm are enclosed in a hard rubber case that effectually guards the former from varying conditions of external temperature and serves to give the hand a firm grasp of the instrument while being applied.

We have found after numerous tests that this instrument will not only give an accurate record of temperature but will give it in one-half the time the Gray instrument requires.

Clinical Reports.

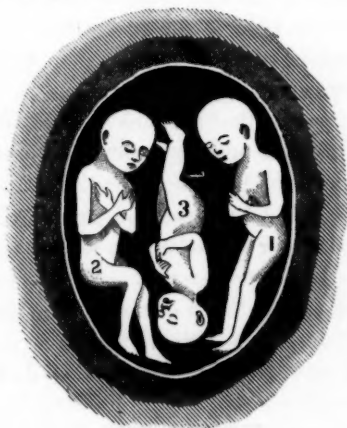
NOTES FROM PRIVATE PRACTICE.

ARTICLE VII.

A Case of Triplets.

Mrs. S., wife of a mechanic in moderate circumstances, ceased to menstruate the last time on August 17, 1879. Complained of labor pains on the 6th of April, 1880.

I was called about noon; she was having light pains. I made an examination; found head presentation. The os uteri not being sufficiently dilated, I gave a powder of pulv. doveri, to be taken



on the evening of the 6th. Was called about two o'clock a. m. Her pains were light and came on once every ten to fifteen minutes, till about one o'clock p. m., then the uterus being well dilated, I ordered a full dose of fluid extract of ergot, to increase the force of the pains.

No. 1 was born at half past one, with the natural head presentation. I ruptured the sac and a moderate amount of amniotic fluid escaped. The child was in appearance about seven and one half months poorly nourished; bones of the skull soft, and did not show much vitality, never cried or took a full inspiration, only gasped a few times.

No. 3, as you will see in the cut, was delivered by crowding up the breech and grasping the feet. I delivered it in about fifteen minutes after the first. This child looked different in contour, was not so long as the first, but cried lustily; showed good lung and muscular development, and weighed about one pound more than the others.

I then assured the good mother that her trouble would soon be over. But by placing my hand upon the abdomen to assist in the removal of the afterbirth, to my surprise I found another child within the uterus with a head presentation safely ensconced upon the left side. I ruptured the membrane and a large quantity of amniotic fluid escaped, more than had previously escaped, and soon after the third child was born, but never breathed, and I noticed dropsy of the cord in the latter case. It was as poorly developed and nourished as No. 1. I then removed the afterbirth with its three cords.

Comments.—It seems that the middle child, or No. 3, was better nourished, with more advanced muscular development, larger chest, more advanced ossification of cranial bones. The question arises were they all incubated at the same time, or would the one located in the center of the uterus receive more nourishment from the mother than the other two. All three were girls.

April 9th, mother and No. 3 doing well, and we have hopes of the father.

Yours truly,

Sterling, Ill.

J. B. CRANDALL.

DR. NORMAN BRIDGE, the librarian of the Chicago Medical Press Association, has been appointed to the medical staff of the Cook County Hospital. The appointment of such a competent man is one which is regarded with universal satisfaction.

Society Reports.

ARTICLE VIII.

TRANSACTIONS OF THE CHICAGO GYNÆCOLOGICAL SOCIETY.

Meeting April 16, 1880. President Prof. BYFORD in the chair.

Topic, Retroversion of the Uterus. H. WEBSTER JONES, M.D., introduced the subject in the following paper:

The general adoption of the term "uterine displacement" presupposes a uterine "situs," i. e., a *normal position*.

The uterine *norme* is preserved when its axis is parallel with that of the superior strait, its fundus at or just beneath the plane of that strait, its os an inch and a half to two inches above the floor of pelvis (or tip of coccyx), the cervix distant from the third sacral bone an inch and a half, and from the sub-pubic ligament two and a half inches.

Deviations from these relations are common, and, within certain limits, normal.

When normal, they are transitory and due to variable distensions of the bladder, of the rectum, of the abdominal viscera, or to active erectility of the tissues of or surrounding and connected with the uterus.

When abnormal, they are more or less persistent, depend upon vicious states of the uterus, or of the organs and tissues with which it is related, or yet may be purely mechanical, and in either case, competent to exercise morbid influences over nerves and nerve centers, perverting nutrition, sensation and functional offices in a remarkable degree.

When a section of the pelvic contents is projected upon a plain surface in accordance with the above postulate, the uterine axis will be found meeting that of the vagina at or about a right angle,

which becomes acute as the uterus descends to impinge upon the pelvic floor, and obtuse only as the cervix slides forward along its inclined plane.

When in this process, however induced, the uterine passes beyond the vertical axis of the body, retroversion may be said to have commenced.

It may attain any degree of divergence from the *norme* compatible with the dimensions of the pelvic cavity; in general terms, from one to eighty degrees from a perpendicular, or sixty to one hundred and forty from the *norme*.

The uterus projecting downward through a plane called the "pelvic roof," which intersects the sub-pubic ligament and the junction of the third and fourth sacral bones, is sustained by cellulo-muscular processes—continuations of its own structure (Rouget), some of which are called ligaments, whose lines of force radiate in the plane mentioned from the cervix toward the sacrum, sacro-iliac junctures, and walls of the pelvic cavity like a fan whose handle the vagina well represents. It is upon the normal antagonisms of all these forces, vagina, utero-sacral and lateral ligaments, that the *situs* of the uterus depends, the vesico-uterine folds the round ligaments and anterior muscular structures of the perineum, being adjuvants worthy of mention.

It needs only a general relaxation of these supports, whether of local or systemic origin, to permit lapse and prolapse of the uterus. And when persistent infringement of the cervix upon the perineal structures obtains, retroversion is sure to follow.

On the other hand, given a loss of balance of antagonisms due to pathological contraction or relaxation of connective tissue, or a localized lessening of erectility due to embolism of curling arteries, or thrombus of venous trabeculæ, and we have divergence of the uterine axis. (Patten.)

More or less flexure of the uterus obtains in every case of retroversion.

Among predisposing causes of retroversion are neurasthenic muscular inertia and local congestions, constipation, intestinal and vesical distention, abdominal compression, subinvolution, chronic inflammation of the uterus or of its supporting tissues, and pelvic tumors.

Exciting causes include violent and sudden muscular efforts, falling, dancing and riding on horseback, especially when the bladder is meantime distended, and last, not least, the incautious use of the speculum.

Treatment may be successful in removing the cause, yet if the displacement itself be ignored, the patient may not only be unrelieved, but become, therefore, the subject of erosions and ulcerations, leucorrhœa, dysmenorrhœa, menorrhagia, metrorrhagia, sterility, dyspareunia, rectal and vesical irritability, neurasthenia, and many reflex and functional nervous aberrations.

Retroversion becomes important soon after puberty, and diminishes in importance after the climacteric.

As illustrations of the manner of demonstration of this truth to the mind of the speaker, he selects four cases, out of a multitude of instances similar in character.

Case I.—The wife of a railway conductor, who had miscarried two years before, related the following story :

Six months after her miscarriage, she was, while sweeping, seized with a violent pain in the epigastrium, which she described as an "unbearable twisting" of the subjacent organ, lasting for a half hour, when she became insensible.

The paroxysms at first recurred whenever she swept, and after a few weeks, whenever she walked the distance of half a mile. All treatment proving unavailing, she was brought to the city for advice. The uterus was found completely retroverted, and enlarged to the measurement of four inches. There was no subjective symptom which pointed to this explanation. But this patient never experienced another paroxysm after the uterus was reinstated.

Case II.—The wife of a civil engineer engaged in building a neighboring line of railway, sent for me, as she could not endure the journey of ten miles to the city. Her only exercise was taken in a sedan-chair, when borne by the laborers to a shady spot, whence she could view the progress of the work, and have the society of her husband. She was found to have complete retroversion, extensive erosion, exhaustive leucorrhœa, wretched appetite and digestion, and was hopelessly dejected.

Two weeks were allowed me for a cure. I demanded her

removal to the city, and visited her daily, applying emollients and stimulants, and finally adjusting a pessary.

She disappeared suddenly thereafter, and I knew nothing more of the case for five years, when she visited me with an apology for the abruptness of her departure, and the non-payment of fees, and desired me to remove the pessary, which she had never disturbed in the interval.

The uterus was found *in situ*, sound in every respect, and the general condition of the patient was so excellent that I could never have recognized her. She averred that her improvement was so rapid after the ten days of treatment mentioned, that she followed her husband into the woods of Wisconsin, and soon was able to take charge of the cooking and housing of the hundred men then under his orders. She had followed his fortunes ever since, never caring to remove the pessary, to which she attributed her cure. It came out as clean and nearly as polished as when introduced.

Case III.—A lady of twenty-five years began to have menorrhagia soon after the birth of her only child. The drain, in two years' time, became constant and irremediable by any of the usual hæmostatics. Anæmia was excessive, and the general condition so alarming that a consultation was had, and curetting performed, but without success. Tampons gave the only palliation, and these did not prevent a persistent oozing of blood. I saw this lady a month after the operation alluded to, and restored to its place an enlarged and retroverted uterus. In twenty-five hours the discharge became pale and watery, and in a week no vestige of it remained. She has since, for about nine months, menstruated regularly and normally, though the subject of constant albuminuria. (Since dead.)

Case IV.—A lady had been for six months the victim of that train of symptoms denominated "neurasthenia." She had anorexia, insomnia, palpitations, constant backache, constipation, colonic catarrh, indigestion, and at times a mental paresis and childish apprehension that was pitiable to see. For exercise she was lifted from her bed to a carriage, and driven for hours every day, and had frequent massage. Every resource that science

could suggest had been applied in her treatment, but without success. No examination of the uterus had been made.

At that interview the uterus was found retroverted, but *not in any other way* abnormal. Its reposition was followed by immediate relief to the backache, and a gradual amelioration of all the symptoms, until in two months' time she considered herself perfectly restored.

The following propositions are presented for discussion :

1. The uterus has a normal situs, with normal deviations which are transitory.
2. Deviations which are constant, or which exceed the natural powers to obviate, are morbid and morbidic.
3. Retroversion is the most common, most pronounced and most vicious of uterine displacements.
4. It is often present without subjective consciousness on the part of patient, nevertheless being *pars magna*, if not *fons et origo mali*.

DISCUSSION.

DR. NELSON spoke of the difficulty of establishing a normal situs for the uterus. He called that a case of retroversion when the axis of the uterus was parallel with the axis of the vagina. The speaker mentioned a case which had occurred under his observation, where the uterus was found in a state of retroversion at one examination, and a few days later was found in a condition of anterior displacement, only to be found again retroverted.

DR. FITCH had also encountered cases like that just spoken of by Dr. Nelson, and thought it not uncommon for a uterus to be displaced in opposite directions within a period of some days. On the whole, the speaker accepted the propositions enunciated by Dr. Jones. Dr. Fitch said that the effects of uterine displacements were variable, and he believed it possible that a woman may have marked retroversion of the uterus with absolutely no effect.

DR. ROLER believed that the uterus had a normal situs but it was only when some morbid conditions occurred referable to the unusual position of the organ, that the situs should be called abnormal.

DR. MILLER : Dr. Jones has presented his subject in the most

exact manner possible. It is as concise as exact. Having predicated his conclusions on geometrical and mathematical science, he gives no latitude for imagination or discursive conversation. We are held to the consideration of lines, angles and figures, and from these there seems no way of escape. I concur in the description of the anatomical situation and relations given by the essayist. While retroversion may take place in varying degrees, the extent of the displacement cannot be taken as a measure of its pathological significance. The factors are so varied, that in one case the initial link in the chain of morbid effects will be merely mechanical—in another congestive—and in a third neuralgic—and the effects may be reflected to different and distant parts of the system.

DR. SUTTON (present by invitation) said that he regarded any position of the uterus a normal one, which produced no abnormal effects upon the woman, and which did not in any degree interfere with the functions of the organ. He would ask Dr. Fitch, if it were possible for a woman to suffer an abnormal position of the uterus with absolutely no symptoms, what there was about such a subject which led to a vaginal examination and discovery of the displacement.

DR. SAWYER believed that the uterus had a normal situs, but that that situs varied in different subjects; he thought that females were subject to as marked differences in those parts as in their facial features. The fundus moves through an arc from before backward; the extremities of this arc vary according to the condition of plenitude or vacuity of the bladder and rectum in the particular individual. Inasmuch, however, as the distension of the bladder and rectum is a factor which varies according to the habit of the woman, this fundal arc may be of a length which is physiological for one person and abnormal for another.

The speaker said further that the altitude of the organ was also subject to variations. Dr. Jones had stated that the cervical tip of the organ should be an inch or an inch and a half above the pelvic floor; these limits the speaker thought too narrow and greatly dependent upon one very important condition. The columns of the vagina are looked upon as the chief antagonists of the gravity of the uterus. Now, the angle at which these sup-

ports meet the uterus, in a word, the efficiency of the support itself, depends much upon the size of the perineal body. It is greater in women who have not borne children; consequently the uterus is normally higher in these persons. The perineal body with the external genitalia seem to shrink, as if subjected to a sort of involution, after child-bearing, and in these persons, on the contrary, the uterus is normally lower. For these reasons the normal situs of the uterus must be described for each individual, and the diagnosis of the slight aberrations from this situs must be founded upon the effects produced by them. The speaker admitted, however, that the uterus, when in the situs ascribed as normal by the essayist, does not produce any abnormal effects.

THE PRESIDENT said that within his recollection the sentiments and practice of the profession in this country had undergone two or three very considerable changes in reference to the importance of misplacements. In the early part of the century the doctrines of Prof. Hodge were the guide to practice in gynæcology. The displacements of the uterus were regarded as the principal causes of the conditions now known as hystero-neurosis or orphaso-neurosis, whichever we choose to call them. After this the writings of Prof. Meigs and Dr. Bennet created a revolution in professional opinion, and to chronic inflammation and ulceration was attributed all the blame for the sufferings of women. The pendulum of professional opinion has swung back to it and has not settled down to the proper medium. Our experience has taught us that between extremes we can generally find the truth. We seldom find displaced uteri healthy in other respects and the question is whether the displacements or the attendant diseases are the real *fons et origo* of the general symptoms. At any rate the speaker could not doubt that the best practice consisted in correcting all the abnormal states of that organ. And while he willingly endorsed all the propositions advanced so clearly and distinctly in Dr. Jones' paper, he might not treat the cases met with in practice exactly as that accomplished practitioner would.

DR. JONES: In closing the discussion, the essayist said, by way of explanation of his "geometry" of the pelvis, that it was an instructive lesson to attempt to draw upon paper the uterus or its connections in accordance with the dicta of authority.

Perhaps the most unanimous point was the length of the uterus, and next, the position of fundus, just below the pelvic brim, and last, the parallelism of the uterine axis with that of the superior strait. Given "approximately" these points, and with a "standard" pelvis, the "geometry" described would surely follow.

All that he claimed for retroversion was that no gynæcologist could afford to ignore it, and that its mechanical treatment was, like that of hernia, one horn of a dilemma, the advantages and disadvantages of which it well paid to study.

ARTICLE IX.

WEST CHICAGO MEDICAL SOCIETY, February 9, 1880.

DR. E. W. LEE ON TETANUS.

Some five weeks ago I was called to see a man who, seven weeks before, through careless driving, was thrown from his wagon and dragged some 75 to 100 feet, crushing the lower part of the leg.

A doctor was called, who said it was only a flesh wound. He did it up with some simple dressing and the man was carried home. About a week later the man noticed that his leg was not getting better, so he sent for another doctor.

The second doctor examined it, and thought it would be healed in a few days. Four or five weeks after, he sent for me.

I noticed the man had a peculiar expression of countenance—that risus sardonicus, that puritanic grin that marks a case of tetanus. It was by mere accident that I noticed it. He complained of tightness of the chest, as though a belt was fastened around him. He had had this symptom nearly ever since the injury. I thought, from examination, that the tetanus had assumed a chronic form, especially from the length of time elapsed.

I put him on bromide of potassium and large doses of hydr. chloral, giving (grs. xx-xxx) 1.3 to 2 grams to keep him in stupor all of the time. The next day he was worse. I thought best to make an examination. Did so, and found, on making an incision, probably (1 in. to 1½ in.) 2½ to 3½ cm. of the fibula

was laid bare, and found to be in a necrosed condition. A regular section of the fibula was made and the necrosed portion taken away. The wound was dressed under spray. His wife rendered the dressing futile by dressing with water. Then I dressed it with carbolized water, and afterwards with carbolized cosmoline.

The case went on getting worse. In just one week he had a case of acute tetanus. He had convulsions, and the muscles of the abdomen were in a state of tonic spasm. All of the muscles were in a state of spasm. The pulse began to rise. The temperature did not rise.

I sent for calabar bean. Commenced by giving (grs. $\frac{1}{8}$ — $\frac{1}{4}$) 0.01 to 0.02 centigrams every two hours by the mouth, without the slightest effect.

Dr. — was kind enough to attend the man during the evening; then sent me word that he could not stay during the night, so I telephoned Dr. Murphy at the hospital, and he came down and stayed with the man during the night. I sent and got Squibb's calabar bean, and gave four injections, under the skin, of (gr. $\frac{1}{8}$) 0.01 centigrams, the first hour. The convulsions abated in frequency. By the time Dr. Murphy left in the morning, it was only necessary to give the injection once in two hours.

With each day there was progression after administering under the skin. If the remedy was not given as frequently, then the convulsions would come on and gradually resume their violence. The drug had controlling influence on these convulsions. By the seventh day an injection in the morning controlled it all day long. The improvement was steady and progressive as long as the drug was given. The man has made good recovery. He has not had any symptoms for seven weeks.

DR. HOLMES related a case of his where the tetanus commenced on the eleventh day after the injury or fracture of a finger. He commenced by giving (grs. ss-j) 0.03 to 0.06 grams every three hours (Squibb's). "To control the pain I gave a little morphine. Did not give enough to affect the pupils of the eyes. I attributed the effect on the eyes to the calabar bean. I gave (grs. ss) 0.03 gram doses by the mouth every three hours, without variation, from the time of the first symptom of tetanus to the conclusion of the disease."

DR. HARCOURT: A week ago to-day I was called to see a young girl, sixteen years old, who had fallen over a pail with a lamp in each hand, suffering a severe cut and wounding the thumb across the hand (right hand) down to the little finger, cutting a portion of the deep palmar arch, cutting with the glass a wide and gaping wound. It was two hours after the accident before I saw her. A neighboring physician had first come in response to a telephonic call. We cleansed the wound as well as we could, put in a number of stitches, fastening very closely together in that position.

In thinking of a case recently reported, it came vividly to mind that this would be a good case for tetanus, for the public opinion of the laity and profession is that an injury near the thumb or great toe is very likely to result in tetanus, and because the wound was cut with glass. I put her on potassium bromide and morphia. She took, during the night, (grs. ij) 0.12 grams of morphia, and (3ij) 60 grams of bromide of potassium. Did not secure any rest until four o'clock in the morning. Next day gave hydr. chloral (grs. x) 0.7 grams. Continued this until Saturday without any symptom of tetanus.

The second day the family physician was called. The case went on favorably until Saturday night, when I received a note saying that "we had called in our family physician," and thus ceased further attention in the case.

General questions were asked and answered, and discussion continued for some time.

DR. LEE continued by relating his experience with a child which had fallen some ten or twelve feet, and fractured the skull some (5 in.) 12 cm. in length. By using the trephine, he relieved the child and made it conscious. The child died at last, evidently from the effects of septic poison.

Followed by remarks by Dr. Harcourt, Dr. Lyman and Dr. Seeley.

POISON BY CHLORAS POTASSII.

DR. ADELIA BARLOW: I shall attempt to give only a brief outline of three cases, one occurring three years ago, another about a year ago, and the last six months ago. I was very certain that the symptoms were those of poison. The first case

was scarlet fever; a child nineteen months of age. The child had been treated with iron, quinine and potassium. The quinine and iron were given every hour; chlor. potass. every two hours. The saturated solution of chlorat. potass. contained (grs. v) 0.3 grams of the chlor. potass. to (ʒj) 4 grams; therefore, about (grs. 60) 4 gms. were given in twenty-four hours.

The child improved under the treatment, and I supposed was out of danger. The mother disliked to give the quinine on account of the bitter taste, and gave it only three times during the day. I requested her to keep up the potassium, as I regarded it a certain specific to that poison (scarlet fever). I did not intend to see the child again that evening, but as I had been in the habit of doing so two or three times a day, I felt as though I would go and see the child, and did so, and found the temperature of the surface of the body increased, the extremities cold and breathing stertorous. There was every evidence of poison, and I put him in a warm bath, gave a large dose of quinine immediately, and ordered brandy. They gave large doses of brandy, until eventually the child came out from under this influence and finally recovered.

In casting about for the cause of this sudden change, I feel it was due to the chlorate of potassium. On investigation, I find in the literature on the subject there was only one case where anything of the kind had been reported. The dose was not unusually large. In the United States Dispensatory it is recommended to give as large doses, and even for a long time as high as (ʒiv) 16 grams in twenty-four hours.

The next case was a child about eight months old, as near as I can recollect. In this case it was given in very large doses, half teaspoonful of the saturated solution every three hours. In addition, I had them give brandy with this dose. It got about ten drops to each dose of about (grs. ijss) 0.16 grams of the chlorate of potassa. The child took two or three doses before the symptoms of poisoning occurred, and the same symptoms as in the first case.

The last case was an infant three weeks old, with a case of thrush. It only took one dose of the medicine. The mother saw the medicine was poisonous, and would not give any more.

The symptoms appeared in a very few minutes after the dose was administered.

Since that time I have felt rather afraid of giving chlorate of potassium. Although I had previously given it in the same doses as I had given in these cases, I suppose it might be idiosyncrasia.

DR. HARCOURT spoke of the poisonous nature of chlorate of potassium. He spoke of Dr. Fountain, of Iowa, falling a victim from taking a large dose—(5j) 60 grams. It reduces the action of the heart. A case was mentioned where an adult took (5v) 20 grams, and the pulse was reduced twenty beats per minute. Given in still larger doses, the heart's action might be completely stopped. The recovery under the use of brandy shows the action here on the heart.

DR. LYMAN stated that Dr. Fountain had experimented on the use of chlorate of potassium, and continued to increase the dose until death. It produces suppression of the urine. He also spoke of the effects on the protoplasm of the cell structures.

HYDROCELE TREATED BY INJECTION OF A SOLUTION OF PERCHLORIDE OF IRON.—M. Houzé de l'Aulnoit. (*Bull. de l'Acad. de Méd.*, Feb. 10, 1880, p. 134).

The following is a résumé of a paper read before the academy of medicine, February 10th:

Instead of using a solution of iodine, which, pushed with too much force, may flow back into the scrotal envelopes and cause their gangrene, the author sought to avoid this grave complication by a simple hypodermic injection of a solution of perchloride of iron. The author cites fourteen cases, of which one recurred and all the rest were cured without the slightest induration of the gland. The author uses two drops of perchloride of iron to a (gtts. xx) gram and a half of distilled water; the tunica vaginalis is completely emptied, (5j) 30 grams of the serous fluid are allowed to flow back, and then the feeble solution of iron causes the desired coagulation.

Domestic Correspondence.

ARTICLE X.

BOSTON LETTER.

MESSRS EDITORS: For a third time I touch upon the admission of women to the Massachusetts Medical Society. The opinion already expressed, that the matter is not by any means settled, received full indorsement at the February meeting of the councilors of the society. The protest of the censors against the October action of the councilors, and to which I referred in my last letter, was presented at the late meeting and convinced the councilors that they had indeed overlooked a vital point, the gist of which I have already explained. It was found that the present society must be consulted, perhaps the legislature as well. A motion to refer the matter to the general society was overborne by the wiser suggestion that the subject should receive more careful consideration in the council. The October vote, which was in favor of the admission of women to the society, was reconsidered, the opposition to this course being notably weak. The whole matter, therefore, now stands where it did before it was introduced to the council. It probably will give rise to a warm discussion at the June meeting of the councilors. In the course of time the subject will be brought before the main society, which, unless I am much in error, will finally shelve it.

The chief bone of contention at the last meeting of the council, was the code of ethics. Two codes were presented. One was the majority code, signed by four of the committee of five. It had once before been submitted to this body, and at that time was roughly handled, and then re-committed to the committee

which was now increased by two members, one of whom was Dr. H. J. Bigelow. During the interval between the meetings of the councilors, Dr. Bigelow took the majority code, pruned and condensed it into the form finally accepted by the council. This was the minority code. Its text has been published in the *Boston Medical and Surgical Journal*, and at the present time is being discussed by the medical journals throughout the country. The contention to which the two codes gave rise in the council brought forth a curious diversity of sentiment. The majority of members from the country favored the acceptance of the long code with its unnecessary detail, and its suggestions of unethical sloughs, the existence of which was so far removed even from the imaginations of many of the councilors, that they indignantly repudiated the necessity of mentioning them. "If," said one gentleman, "members of this society have not the instincts of courtesy and honor, this code will never influence them." "I have been a physician for thirty years," said another, "and until I read this code, supposed I was one of a body of gentlemen. I cannot believe that the practices suggested by the majority code ever existed," etc. The friends of this code felt that elementary instruction in ethics was a paramount necessity to young as well as to many old physicians. Their tone of thought reminded one of the woman who on leaving her children alone, told them not to put beans in their noses, which all of them straightway did so soon as her back was turned, though they never had thought of the trick before. Perhaps the equally unnecessary suggestion in the majority code would have created a like result.

The friends of the minority code justly felt that the mere idea that such puerile instruction and such hints of evil practices as were contained in the majority code were necessary to a liberal profession, was almost an insult. Others there were who felt that since the society had existed in peace for nearly one hundred years without a code, there was no need of one at the present day. But they were willing to fall in with the majority in the acceptance of the concise, sensible minority code, their feeling being very neatly expressed in a recent editorial written by Dr. Geo. B. Shattuck: "To the members of the profession in Massachusetts, we wish a pleasant journey under the auspices of this

compact little code, and hope it may prove a pillar of fire to the ignorant Israelite and a Red Sea to the false Egyptian."

In behalf of Dr. Cotting who was the active author of the majority code, it should be said that but for the latter the minority code, in all probability, would not have made its appearance. One is the basis of the other.

For several weeks the medical and lay public have been agitated over the proposed act to regulate the practice of medicine. The bill was the outcome of the discussions in the Social Science Association. After being submitted to the legislature, a committee was appointed whose duty it was to listen to evidence in favor of and against the bill. Very curious, very amusing and very grave developments were the result. The opponents of the bill were charlatans of every ilk. Long-haired spiritualists and clairvoyants of the male sex and unwholesome females of doubtful occupation; fanatics and selfish individuals of every stage of ignorance, appeared as remonstrants. So forbidding were they in mien—so ignorant and unblushing in their arguments, that it was felt that no other testimony in favor of a medical code was necessary. The bill in question united regular, homœopath and eclectic physicians. A board of examining censors, which should represent each of these bodies, was to be formed. Applicants for licenses to practice were to be required to give evidence of a fair medical education, and to present a diploma of graduation from a legalized school. Therapeutics were to be tabooed, so that no point of difference could arise between the censors. In short, the object of the bill was to rid the State of its horde of untaught, dishonest quacks. We are overridden by them. They are a sore upon the body politic—a festering excrescence—a band of thieves. The petition which accompanied the bill, upon its presentation, was signed by very many of our most highly educated and wisest regular physicians. At the outset, the feeling that the bill should pass the legislature—that it was a dire necessity—was very general. Even those who did not agree with all the clauses of the medical act, felt that it would be better to have this bill made a law, immature as it was in some respects, than to permit quacks any longer to abuse the confidence of the credulous. It would be a simple matter to

modify the act at a later day. On the other hand, many members of our regular State society opposed the bill because it recognized homœopaths and eclectics, and opened the way to an undesirable affiliation between them and the regular school, giving the three bodies a common position before the public, as well as equal standing and equal rights. Another objection was that the bill gave the governor and council the power of appointing the censors, instead of leaving it where it should be—in the hands of the proper and only competent party, the medical profession itself. Another objection was that such a bill could no more be enforced than a liquor law. Opposition also arose on the ground that no matter how carefully a bill may be drafted, it will be unsuccessful, because the people will employ quacks, even while knowing that they are so. And so on. You can see how objections might be multiplied. The bill, however, was defeated. A minority medical act was then presented to our general court, and that likewise suffered defeat. So that we not only have no law, but the quacks are more than ever firmly entrenched. But one endeavor to regulate the practice of medicine having been fairly made, and public thought in regard to this matter having been awakened, further, and let us hope more successful, efforts probably will be made to protect the State against the knavery of the swarm of charlatans now at work among us.

The homœopaths are making strenuous attempts to gain admittance, in a professional capacity, to our city hospital, which thus far has been conducted by the best representatives of the regular school. Since the hospital is a city institution, supported by funds drawn from the city treasury, and therefore dependent upon taxpayers who do, as well as upon those who do not, employ regular physicians, it can hardly be said that homœopaths have no right to demand representation within its walls. Their *pro rata* rights, however, are very diminutive. This matter is not yet settled. Indeed, it is merely in embryo. The homœopaths would like to develop a strong opposition to their desire to secure wards in this hospital. In fact, they court this opposition. An editorial in a recent number of the *New England Homœopathic Gazette*, after kindly speaking of members of our school as "self-conceited bigots," makes the claim that opposition has

always aided the homœopathic fraternity, and adds that still more resistance to them on the part of the regular medical faculty would be a good thing. Judging from the spirit of this editorial, a layman would actually think we persecuted homœopaths, when the fact is that one rarely finds a homœopathic journal without its bitter attack on the regular profession. On the other hand, the journals of the regular school seem to have made a tacit agreement to avoid all but strictly necessary mention of the so-called homœopaths, who, with some very rare exceptions, are so untrue to the Hahnemann faith that they do not deserve the name they wear. * *

Boston, April 14, 1880.

CONGENITAL NUCLEAR CATARACT.—Alfred Græfe called attention, at the Ophthalmological Congress at Heidelberg, to a form of nuclear cataract of very firm consistence, which is found in infants, but which, although probably not unfrequently met with, has, in his opinion, not received sufficient notice in the literature of cataract. It is, however, of importance with reference to the proper means to be adopted for its removal. On attempting to needle this form of cataract its density becomes evident from the movement imparted to the lens. The result of the decision is also unsatisfactory, imbibition and absorption taking place only imperfectly. The general opinion of those members who took part in the discussion following the paper was that extraction is the proper method of treating such cases, and that this operation can safely be performed on very young children. In the January number of the *Centralblatt f. Augenheilkunde*, Dr. Just publishes seven successful cases of extraction in infants, in which cases the cataract was of hard consistence. No bandage was used after the operation. He believes that this form of cataract is not congenital, but begins very shortly after birth. This opinion seems, however, to be based entirely on the statements of the mothers.

BOOKS AND PAMPHLETS RECEIVED.

- A Manual of Pathological Histology. By V. Corine and L. Ranvier. Translated with notes and additions by E. D. Shakespeare, A.M. M.D. and J. Henry C. Simes, M.D. 360 illustrations on wood; price \$6.50, pp. 784; sheep. Philadelphia: W. C. Lee. 1880.
- Montreal General Hospital Reports, Clinical and Pathological. Edited by Wm. Osler, M.D. Vol. I. Montreal, Canada: Dawson Bros. 1880.
- Annals of the Anatomical and Surgical Society. Vol. I. 1878-9. Brooklyn, N. Y. Published by the Society, 23 Madison street. 1879.
- Brain Work and Overwork. By H. C. Wood, M.D. Price 50c. American Health Primer Series. Philadelphia: Presley Blakeston, 1012 Walnut street. 1880.
- St. Bartholomew's Hospital Reports. Edited by W. S. Church, M.D., and Alf. Willett, M.D. Vol. XV. London: Smith, Elder & Co. 1879.
- A Manual of Surgery. By W. Fairlie Clarke, M.D. Third edition; 190 engravings, all wood. Price \$2.00. New York: G. P. Putnam's Sons. 1880.
- Physiological Laboratory, Harvard Medical School, Boston. Collected Papers. 1873, 1879. For private circulation.
- Minor Gynæcological Appliances and Operations for the Use of Students. By J. Halliday Croom, F.C.S.E. Edinburgh: E. & S. Livingstone, 57 South Bridge. 1879. Price \$1.75.
- Sore Throat, its Nature, Varieties and Treatment. By Prosser James, M.D. Fourth edition, illustrated, hand colored plates. Philadelphia: Lindsay & Blakiston. 1880.
- A Treatise on the Science and Practice of Midwifery. By W. S. Playfair, M.D., F.R.C.P. With notes and additions by Robert R. Harris, M.D. 185 Illustrations. Philadelphia: H. C. Lea. 1880.
- A Treatise on Urinary and Renal Diseases, Including Urinary Deposits. By Wm. Roberts, M.D. Third American Edition; price \$4.00; cloth. Philadelphia: H. C. Lea. 1879.
- Skin Diseases, a Manual for Students and Practitioners. By Malcolm Morris. Illustrated, price \$1.75; pp. 320. Philadelphia: H. C. Lea. 1880.
- Headaches, Their Natures, Causes and Treatment. By Wm. Henry Day, M.D. Third edition, illustrated. Philadelphia: Lindsay & Blakiston. 1880.
- A Manual of Auscultation and Percussion. By Austin Flint, M.D. Second edition, revised. Philadelphia: H. C. Lea. 1880.

- Observations on Fatty Heart. By Henry Kennedy, A.B., M.B. Dublin: Faunia & Co., 41 Grafton street. 1880.
- A Practical Treatise on Nervous Exhaustion (Neurasthenia.) By Geo. M. Beard, A.M., M.D. New York: Wm. Wood & Co. 1880. Price \$1.75.
- The Microscope and Microscopical Technology. By Heinrich Frey. Translated and edited by Geo. R. Cutter, M.D. Illustrated; 183 wood engravings. New York: Wm. Wood & Co. 1880. Price \$6.00.
- The Student's Guide to Diseases of the Eye. By Edw. Nettleship, F.R.C.S. Eighty-nine illustrations. Philadelphia: H. C. Lea. 1880.
- The Essentials of Anatomy. By Wm. Darling, M.D., F.R.C.S., and Ambrose L. Ranney, A.M., M.D. New York: G. P. Putnam's Sons. 1880.
- A Practical Handbook of Medical Chemistry. By Wm. H. Greene, M.D. Philadelphia: H. C. Lea's Son & Co. 1880.
- Clinical Lectures on Diseases of Women. Delivered in St. Bartholomew's Hospital. By J. Mathews Duncan, M.D., LL.D. Philadelphia: W. C. Lea 1880.
- Dr. Denison's Climatic Map of the Eastern Slope of the Rocky Mountains in Wyoming, Colorado and New Mexico. Denver, Colorado. Price 50c.
- Transactions of the Society of the Alumni of the Medical College of Ohio. Cincinnati, Ohio: *Cincinnati Lancet* Press Print. 1880.
- Lectures on the Diseases of the Nervous System. By J. M. Charcot. Edited and translated by Geo. Sigerson, M.D. Illustrated. Philadelphia: H. C. Lea. 1880.
- Atlas of Skin Diseases. By Louis A. Duhring, M.D. Part VI. Philadelphia: J. B. Lippincott & Co. 1879.
- Atlas of Histology. By E. Klein, M.D., F.R.S., and E. Noble Smith, L.R.C.P., M.R.C.S. Parts VIII. and IX. Philadelphia: J. B. Lippincott & Co. 1879.
- Atlas of Human Anatomy. Containing 180 Large Plates. Arranged according to Drs. Oesterreicher and Erdl. Explanatory Texts by J. A. Jeancon, M.D. Parts 1, 2, 3 and 4; 75 cents a part. A. E. Wilde & Co. Publishers, Cincinnati, Ohio.
- A New Method of Permanently Removing Superfluous Hairs. By L. Duncan Bulkley, A.M., M.D. G. P. Putnam's Sons, New York. 1878.
- On the Nomenclature and Classification of the Diseases of the Skin. By L. D. Bulkley, M.D.
- Report of the Resident Physician of Brigham Hall, Canandaigua, N. Y.; 1880.
- Sixth Annual Report of the Superintendent of the Cincinnati Sanitarium; 1879.
- Report of the Condition of the Water in the First Ward of the City of Racine, Wis. By J. G. Meachem, JR., M.D.

Editorial.

THE ABUSE OF MEDICAL CHARITIES.

We recur to this subject again on account of the general interest manifested in it by the profession, both here and abroad, and also on account of the intrinsic importance of the question involved.

It is always much easier to point out evils than it is to remedy them; to find fault with existing institutions than to replace them with better ones.

It is evident to us that those who are just now saying most about the abuses in the medical charities of this city, as well as in New York and elsewhere, have a very inadequate idea of the real causes of these abuses. In nearly all the articles and reports that we have seen on this subject, the medical charities, by which is chiefly meant free dispensaries, are reported as being run in the interest of the medical colleges and most of the abuses are claimed to arise from the efforts of college faculties to increase their clinical material. That we do not misrepresent, the following paragraphs from a recent report will show. The report to which we allude says:

"They (the committee) find, on closer personal investigation, that at least one-third of the patients applying at dispensaries for treatment are in no way entitled to it, and that there is no adequate reason why medicine should be furnished to at least one-half of the remainder.

"They find that the task of attending the sick poor is, by almost common consent, relegated indirectly to the colleges, which are not slow to take advantage of the clinical material thus afforded, and which, having extended this branch of their

work beyond all reasonable bounds, are in no small degree responsible for the present deplorable condition of affairs.

"Your committee do not need to study this subject long to see that self-interest is at the bottom of this charitable display and that it matters little to the colleges, *i. e.*, to the individuals composing their faculties, who among the remainder of the profession suffer, so long as they gain by it.

"They find that a somewhat extensive 'ring' controls the administration of medical charity, and that within that 'ring' a few older professors dominate over all the rest. Nor is this the case only in regular circles. It holds just as true among the irregulars. Abundance of evidence convinces them that the trustees and officers of these institutions, both colleges and dispensaries, do not sympathise with any notion to correct the abuses alleged."

We will not stop to comment on the gravity of these plain personal accusations nor upon the modesty of those making them. Neither will we quote similar direct charges against the colleges from the *Medical Record* of New York; but will proceed directly to a brief consideration of the facts; and so far as abuses exist, try to find who is responsible for them and how they are to be remedied. If our memory is not entirely at fault, both the dispensaries in the West and North divisions of this city were organized and maintained for years without the most remote connection with any medical college; indeed when no medical college existed in either of those divisions of the city. They were organized, managed and attended exclusively by the younger class of physicians, who were ambitious to relieve the sick poor, bring themselves into public notice and increase their professional reputation. So far as our knowledge extends, the North Side Dispensary still remains wholly disconnected from any medical college. Since the erection of the new County Hospital in the West Division and the location of the Rush Medical College in the same vicinity, the West Side Central Dispensary has been accommodated with rooms in the basement of the college buildings, but we have failed to see, in the list of names making up the dispensary medical staff, those of any of the older professors; or indeed of any except those of the younger class of medical men, who both at-

tend the patients and give what clinical instruction the institution affords. It is true that the South Side Free Dispensary was organized and sustained for several years by members of the faculty of the Chicago Medical College, but under a legal incorporation entirely distinct from that of the college, and with a corps of attending physicians and surgeons composed almost entirely of the younger members of the profession, two-thirds of whom had no official connection with the college whatever.

With the exception of one or two members belonging to the gynæcological department, the entire dispensary staff is now composed of the younger class of practitioners.

If it is true, as above stated, that the three regular and principal free dispensaries in the city are now, and always have been, served almost exclusively by the younger class of practitioners, a large majority of whom are not members of any college faculty, whose fault is it if one-third of the whole number received and prescribed for were not entitled to such aid? Will it be pretended that the young practitioners serving these several institutions were required by the medical colleges or by any rules of the dispensary boards of trustees, on which some one or two of those "older professors" might have had a place, to examine and prescribe, *nolens volens*, for all who might present themselves whether rich or poor? Or was every member of each dispensary staff at full liberty to exercise his own judgment and promptly turn away any that he might feel sure were able to provide for themselves?

Not only have these attending physicians been thus entirely at liberty to discriminate and restrict their services to the really needy, but the principal founder of the South Side Free Dispensary, who happens to be one of the oldest professors in the city, and who made it a donation, the income from which defrayed a large part of the expenses of the institution for several years, stipulated in writing as the condition on which the donation was made, that the benefits of the dispensary should be *restricted entirely to the actually poor*.

If it is true that one-third of those who have been receiving aid at the several dispensaries are not actually too poor to provide for themselves, then certainly there is a forfeiture of all further

claim on the donation alluded to. And yet, who knows but that in the imagination of the young brethren from whose report we have quoted, that same old professor is one of that "extensive ring controlling the administration of medical charity" and even one of the "few who dominate over all the rest." One thing is very certain; and that is, if the trustees of the several dispensaries and charitable medical institutions of this city have erred in the direction of allowing their benefits to be extended to many who were not needy, their error consisted in leaving the matter of discriminating altogether to the members of the attending medical staffs, composed chiefly of young practitioners.

The allegation that the bestowment of indiscriminate medical charity is favored by the faculties of the colleges for the special purpose of increasing their clinical material, is hardly sustained by the facts, so far as relates to the regular schools at least. According to a recent annual report from the trustees of the South Side Free Dispensary, occupying rooms in the basement of the Chicago Medical College, the whole number of visits made by patients during the last year was 11,759; at least three times as many as could be used for any useful clinical purpose by that college.

The number visiting the Central Free Dispensary at the Rush Medical College is still larger. When it is remembered that each of these colleges has ample facilities for clinical instruction in the hospitals with which they are connected, it will be seen that there is certainly no need of their favoring any abuse of medical charity for increasing their clinical material. We have written the foregoing, not from any personal feeling, but simply to show that the outcry against the college faculties, the trustees of dispensaries and the "older professors" was neither founded on facts nor calculated to remedy the abuses complained of. That every medical charity in the city is imposed upon more or less by persons who are able to provide for themselves, we have no doubt. And such will continue to be the case so long as such institutions exist and human nature remains unchanged.

Neither the members of college faculties, nor of the boards of dispensary trustees can stand sentry at the doors to keep the undeserving out. No more can it be expected that the members

of the attending staff on duty, will keep up a constant effort at discriminating between the actually needy and those not needy. It is an ungracious kind of work that very few are willing to do day by day. Besides there is no visible basis in dress, good looks, cleanliness, or intelligence, on which one can rely as a mark of distinction between the two classes. To require every applicant to bring a card certifying that he or she is needy, signed by some person presumed to know the circumstances of the applicant, would do some good. But the facility with which such signatures are obtained, and the ease with which the cards can be passed from one person to another, especially under fictitious names, renders this expedient of but limited practical worth. To charge all applicants a small fee, as has been proposed and tried in some quarters, would reduce the number of applicants in a marked degree. But it would reduce the column from the wrong end, by excluding the absolutely destitute who are most needy of all, while those not needy but really able to pay the minimum fees of physicians, would be all the more free to come and avail themselves of the small fee system. The truth is, the abuses so much complained of are inherent in the system of establishing medical charities to which the sick can resort for free medical advice and medicines. And as we stated in a previous number of this journal they cannot be effectually removed except by abandoning the system itself.

And when our younger professional brethren have practically wrestled with the problems involved in every aspect that human ingenuity can devise for thirty or forty years, they will come to the same conclusion. As the report from which we quoted at the commencement of this article, ends with a series of resolutions touching various topics, and which appeared to meet the approval of the society to which the report was read, we append them for the benefit of our readers. They are as follows:

Resolved, That this society holds that the trustees or managing officers of dispensaries owe it to themselves and the profession at large to adopt such means as shall most effectually prevent the wholesale abuse of medical charity.

It is understood that this resolution is not intended to militate

against the proper administration of medical charity, but against gratuitous services to those not entitled to them.

Resolved, That when druggists exceed their proper function as dispensers and chemists, and act in the capacity of prescribers, they usurp a position to which they are not entitled either by experience, knowledge or license, and that this society denounce all such as unworthy of the confidence of the public or the business recommendation of the profession, and advises that its members sedulously avoid any relations with them.

Resolved, That this society holds that a physician's prescription does not become public property after passing out of his hands, and should never be either repeated for the same patient or duplicated for another, except by the usual authority of the prescriber.

Resolved, We see no justice in treating the clergymen or their families gratuitously, unless they should become objects of charity.

Resolved, That the expenses of attending the sick poor, especially at their houses, ought to be borne as all other public expenses are; that physicians should be selected for this work without reference to personal feeling, but simply on the score of ability and character, and that they should be paid, from the public treasury, a sum sufficient to secure adequate and proper service.

INFANTILE CONVULSIONS.—(*Archivio Clinico Italiano*, No. 3, 1880.)

Prof. J. Simon, when the children are no longer able to swallow, evacuates the bowels with an abundant simple or oily enema and afterwards injects the following:

Musk	(gr. ij)		200
Camphor	(℥j)	1	
Hydrate of chloral.....	(gr. v)		300
Yolk of egg.....	(℥j)	1	
Distilled water.....	(℥v)	150	

Notes and Extracts.

LOCAL SANITARY CONDITIONS AND EPIDEMICS.

In the number of this journal for March we copied an article from Supplement No. 3, *National Board of Health Bulletin*, giving results of investigations concerning the sanitary or unsanitary condition of the water supply of many places in the South, where yellow fever had prevailed in the summers of 1878-9. Regarding everything that can add to our knowledge of the local sanitary conditions as of paramount importance in the study of etiology, and following up the same general purpose, we shall copy below somewhat lengthy extracts from a report, in the same Supplement, on the "Sanitary History of Memphis, being based upon a house-to-house inspection of the city, between November 24, 1879, and January 3, 1880, made under the direction of the National Board of Health."

This inspection, made by parties carefully selected for their fitness to do the work, almost immediately after the prevalence of a very severe epidemic of yellow fever two summers in succession, may be regarded as fairly representing the condition of the soil, water, drainage, sources of pollution, etc., that actually existed during the two preceding seasons. And by comparing these with the meteorological conditions during the same period, as recorded for the Signal Service Bureau of the general government, we are enabled to study successfully the bearing of the entire local sanitary conditions, not only on the original progress of the epidemics, but also on the ratio of sickness and mortality from the prevalence of ordinary diseases. The latter, though attracting less public attention, is really more important to the permanent welfare of the people than the former. Severe epidemics rarely

affect communities, except at long intervals, and only for a brief period of time; while a high ratio of mortality, from ordinary diseases, shows a constant sacrifice of life that, in the aggregate, far exceeds that produced by the most severe epidemics. This is fully demonstrated by the facts embodied in the table of mortality for five consecutive years, given below.

That table shows an annual prevalence of dysentery, diarrhoea, cholera infantum, pneumonia, phthisis, etc., equal to the most densely populated and unsanitary cities, either in this country or Europe; the annual death rate for the non-epidemic years being 35 per 1,000 of the population. And more than fifteen per cent. of this extraordinary ratio of mortality was from pneumonia and phthisis. But we will let the facts, as given in the report, speak for themselves, by copying as follows:—[Ed.

The city of Memphis, at present the "taxing district of Shelby County," is situated in Shelby County, Tennessee, latitude 35° 7' north, longitude 90° 7' west, with a greatest altitude of 287.44 feet above tide-water in the Gulf of Mexico.

POPULATION AND GROWTH.

At this time [1852] the population was estimated at less than 10,000, a rapid advance being claimed for the two subsequent years, so that in 1854 a census showed 12,867 inhabitants, which was increased by the close of 1857 to an estimated population of 25,000, this rapid growth being attributed to the completion of the first portion of the Memphis and Charleston railroad. Although there was a large increase between 1850 and 1860, this latter estimate was not borne out by the figures of the eighth United States census, which gave Memphis a population in 1860 of 22,621, as against 8,841 in 1850, by the same authority. The ninth census (1870) placed the population at 40,226; but it is important to note, in this connection, that the city limits were materially enlarged in 1857-'68, so much so that they embraced 4,114 acres at the time when the ninth census was taken; and much of this additional area was as thickly settled as the average of the former or present area. During the session of the State legislature of 1871 and 1872 another change was made, and the area was reduced to the present city limits, a reduction

which cut off 37 + per cent. of the territory and 39 + per cent. of population. This would make the population of 1870, contained within the area of the present city limits, 24,253, and it is this figure, and not 40,226, which should be taken in any estimate of the growth of the city within the past decade.

PRESENT POPULATION.

On the 1st of January, 1880, the population of Memphis, as shown by the house-to-house inspection returns, is 30,659, showing an increase of nearly 26.4 per cent. since 1870. Of these there are 16,705 whites in 3,775 families, an average of 4.42 persons in each family, and 13,954 colored in 3,609 families, an average of 3.87 persons to each family—a mean average of 4.15 persons to the aggregate of 7,384 families. These occupy 5,584 of the 9,386 dwellings accounted for, giving an average of 5.49 persons to each occupied dwelling. In 1870 there were 5.14 persons to each family (white and colored not separated), and 6.28 persons to each dwelling. The reduced average of occupants to dwellings is readily enough accounted for by the large number of buildings erected during the decade—an increase equal to nearly 54 per cent., while the increase of population is, as above shown, less than 27 per cent. An explanation of the reduction in the number of persons to a family is more difficult, and is complicated with questions involving a study of the epidemics of 1873, 1878, and 1879, of the changed social status of the colored people, and other factors, not, probably, beyond the scope of a “sanitary survey,” but for which no opportunity has yet offered.

AREA AND TOPOGRAPHY.

An area of 2,590 acres is embraced within the present city limits, the outlines of which approximate the figure of a truncated right-angled triangle (or trapezoid), the truncated extremity (8,175 feet) being the northern boundary; the perpendicular (13,050 feet) the east boundary; the base (11,625 feet) the southern boundary; while the hypotenuse (17,000 feet) is the water frontage on the Mississippi river.

The site of Memphis and the country immediately surrounding it is the Fourth Chickasaw Bluff, a loess formation, consisting

of a fine siliceous loam, of a rich chrome yellow or buff color. This is superimposed upon a varicolored stratum of sands and gravel, locally known as the "orange sand," a southern extension of the drift formation, and immediately beneath which is found the La Grange group of clays and sands of the Tertiary period. The "orange sand" stratum is nearly horizontal, so that it is reached at varying depths according to the thickness of the loam above it.

The bluff formation is well defined along the southern half or two-thirds of the river front of the city, where it presents a bold, almost perpendicular western face, cut through by street openings to the levee. Its greatest elevation is in the southwestern section (on Tennessee street, near the corner of Talbot), where it rises to a height of 67.9 feet above the highest water mark, that of 1867. From this point, along the river front, it gradually descends toward the north, until it is lost in the valley of Bayou Gayoso, some 1,500 feet south of the north boundary. Toward the south the inclination is much less, so that at the south boundary near the river, the highest bluff level is still 57 feet above high water. North of Bayou Gayoso the bluff again rises, but recedes from the river at a much greater angle. Extending back (east) from the river the surface is undulating, with the long axes of the swells and depressions in general north and south lines, except in the northern portion ("Chelsea," "Scotland," and the upper part of "The Pinch"), where the long axes run nearly east and west.

NATURAL DRAINAGE SYSTEM.

Through the depressions flow a series of bayous which form the natural drains of the area, only a narrow strip along the river front draining into the Mississippi river, except in the extreme northwestern portion of the city. Of these bayous the Gayoso and Quimby are the most important. Bayou Gayoso (with its east and west forks, and its tributaries, the Little Betty and De Soto) drains the southern and central divisions of the city, and flows in a general northerly direction until it receives Bayou Quimby with the drainage of the northern division, when it pursues a northwest and west course, emptying into the Wolf river

at a point about 2,500 feet above the junction of the latter stream with the Mississippi.

This natural drainage, flowing mainly from south to north, is still further supplemented by minor undulations running at nearly right angles with the above. As the original conformation of the site has not been materially changed, these undulations afford lateral drainage communicating with the main system, and, with the exception of the localities to be hereafter specified, this surface drainage is ample, even for the heaviest rainfalls.

The average width of the bayous within the city limits varies from ten to twenty-five feet, measured at about mid-height of the banks, and the volume of water varies with the rainfall and stage of water in the Mississippi.

There are but few springs emptying into the bayous, so that their contained water is mainly made up of the surface drainage, and of what is locally known as the "sipe" water—water which has penetrated below the surface, and gradually oozed out through the banks of the bayous. During high water in the Mississippi the river water enters the bayous and "backs up" the contents of the latter, this "backing up" having been known to extend for over a mile through the most densely settled parts of the city, and leaving behind it, in the bed of the lower part of the bayou, accumulations of mud or silt of five or six feet in depth. As the stage of water in the river is high enough to obstruct the bayou for four or five months in the year, the current is sufficiently retarded during that period to allow of a large deposit of organic matter upon the banks of the bayous, which rapidly decomposes and becomes offensive as the water falls and exposes it to the action of the sun and air. In addition to this source of pollution, there are a large number of privies, built directly over the bayous or upon their banks, the contents of which are discharged directly into the waters, while the surface and sipe water, for a distance of several hundred feet in many localities, is also contaminated with fecal filth from surface privies, overflowing and leaky vaults, etc. A five-foot sewer, which gathers the surface drainage of an area of some 140 acres, on which is the city hospital, and several small private sewers also contribute their quota to the fouling of Bayou Gayoso.

Including the city, an area of upward of 5,000 acres is drained by the bayou system; the total length of Bayou Gayoso, from Wolf River to its head, being five and a half miles, with an inclination of 1 foot in 180 in the city limits; the total length of Bayou Quimby, from its junction with Bayou Gayoso to its head, is a little less than four and a half miles, with an inclination of about one foot in 140; and the total length of Bayou De Soto, from its junction with Bayou Gayoso to its head, is two and four-fifths miles, with a slightly greater inclination than that of Bayou Quimby.

RIVERS—THE WOLF AND MISSISSIPPI.

Wolf river enter the city in the extreme northwestern section, constituting practically, its northwestern boundary for an extent of about 4,000 feet.* It is an exceedingly tortuous stream, flowing through cypress swamps and cane-brakes for about 65 miles, and receives the Loosa Hatchie river just at the northern boundary of the city. Like the bayous, it is "backed up" when the Mississippi rises more than 15 feet above low-water mark, and it is asserted that at such times the foul waters of the bayou also enter and pollute it. A tannery and a group of slaughter-houses, located about 300 yards below the water-works, discharge blood, offal and refuse into the stream through a small "run," upon whose banks they are built. It is also stated that when this "backing up" occurs such material is necessarily carried up to the pumps. Aside from its malarial influence, derived from the "bottom" lands through which it flows, the chief sanitary importance of the Wolf consists in its being, to a large extent, the source of the water supply of the city, as above intimated. Its waters have been analyzed by Assistant Surgeon Smart, United States Army, and detailed information concerning it will be found in his report upon the water supply of Memphis.

It should be added, however, that personal observation does not confirm the statements made as to the pollution of the water supply by the "backing up" of the bayou and river. With a

* In the northwestern portion of the city a section of low alluvial land about 300 acres in extent is separated from the first and ninth wards by the Wolf river. This is subject to overflow during high water, is partly cultivated in cotton, has one white and twelve or fourteen colored families (who are obliged to vacate during high water), and possesses no features of sanitary interest apart from those which characterize the Mississippi "bottom" generally.

stage of about 21 feet of water in the Mississippi, and while the bayou was still "backed up," a decided under current was found in the Wolf opposite the water-works. It is obvious that any rise in the Mississippi sufficient to dam up the waters of Wolf river would also dam up the contents of the bayous and of the "run" above alluded to; and that as the water falls the outward current in the Wolf will be re-established, carrying out with it the retained contents of the bayous and "run." The contents of these latter can only be carried up Wolf river to the water-works when to a suitable stage of water in the Mississippi shall be added a local rain (confined to the watershed of the bayous) heavy enough to swell the volume of water discharged by the bayou beyond the volume of water contained in the Wolf, and sufficiently greater to overcome the fall in the latter stream from the water-works to the mouth of the bayou. Remote as such a coincidence would seem to be, it is stated to have occurred twice within the past ten years. There is, however, reason for believing, from personal observation, that the surface water of the Wolf may be carried up stream for a considerable distance, even when the deeper water is flowing out. Whether this ever occurs to such an extent as to carry the foul waters of the bayou and "run" up to the pumps it is not presumed to assert.

The extreme range between high and low water in the Mississippi at Memphis is about 35 feet, and a gradually shelving shore of varying extent is thus alternately covered and exposed. At the date of inspection, Dec. 13, 1879, with a stage of 19 feet 10 inches above low-water mark, this shore had a greatest width of 258 feet from the foot of the bluff at Jefferson street. Extending north from Jefferson street to the mouth of Wolf river (2,687 feet measured from center of Jefferson to center of Jackson street, along the line of Front Row) the water covered this sloping shore, to the foot of the bluff, with the exceptions noted in the reports of a special inspection of the river front (*q. v.*). Extending south from Jefferson street the bluff has been cut away so as to increase the depth of the shore, and this space, known as "the levee," had a varying exposure of from 150 to 260 feet between the water's edge and the foot of the bluff until the line of Beale street was reached (nearly the same distance as that de-

scribed above). At Beale street the water again came up to the foot of the bluff, but from this point south to the city limits there was an irregular width of from 20 to 200 feet.

THE WATER FRONT.

These three divisions of the river front present strongly marked contrasts. The northern one, beginning at Wolf river, has a low, flat area of about four acres ("Happy Hollow") partially submerged during high water, and receiving a considerable portion of the filthy surface drainage of the northern end of the "Pinch," one of the most objectionable quarters of the city, as well as the polluted discharge from the bayous. The bank is sandy and easily washed, so that mattress protection is necessary. From Market street south to Jefferson the bluffs gradually rise, varying in height from four to twenty-five feet, and along this extent there are gullies, "wash-outs," deposits of fecal filth, the outlets of box-drains and culverts, and the accumulations of a public "dump," including everything offensive, from street sweepings to the contents of privy vaults, which, up to May, 1879, were carted to the crest of the bluff at the foot of Washington street, and thence allowed to find their own way to the river. The central division consists of the "levee," so called, an improved area paved with stone, clean and in good condition, with the exception of such nuisances as arise from the want of public latrines for the use of the roustabouts, stevedores, rivermen, etc. As the river falls after high water a deposit of mud covers the "levee," but this is washed from the well-paved and steep slope by the first rain. The southern division reproduces many of the evils of the northern one, aggravated by the location of the present public "dump-boat" at the foot of Beale street, a decided nuisance at this date.

The details of the conditions above generalized are embraced in the special report previously alluded to, the substance of which was conveyed to the proper authorities through the committee on the sanitary survey on the 18th of December, 1879, supplementing previous reports on some of the conditions which had been already submitted on November 10 and December 13.

SEWERAGE.

There is practically no sewer system in Memphis, the four and a half miles of existing private sewers having only two hundred and fifteen connections in all. And while the natural facilities for surface drainage are ample, they have not only not been fully utilized or preserved, but in many instances they have been materially impaired, and in some entirely destroyed, by changes in the original conformation, or by the character of the street conservancy. With an extremely retentive soil this obstruction of natural drainage renders unpaved streets and alleys almost impassable during wet weather, and readily accounts for the large proportion of damp or wet cellars and basements. These causes—namely, the absence of sewers and of subsoil drains and the obstructed surface drainage—also affect unfavorably the areas of “made land,” although these are not numerous or extensive. (Such areas are described in the summary description of the wards.)

STREETS AND ALLEYS.

There are sixty-seven miles of streets and thirty-five miles of alleys within the city limits. West of the bayou these run nearly with the cardinal points of the compass, the variation being a little east of north and south of east. In the northeastern section this variation is more decided, but in the central and southern sections the same general lines are preserved on both sides of the bayou. Details as to width, paving, and condition of streets, alleys, and sidewalks will be found in the ward summaries.

BUILDINGS—MATERIAL, AGE AND CHARACTER.

Of the 7,202 buildings of all kinds (this is exclusive of out-houses) within the city limits, 72 per cent. are of wood, 27 per cent. of brick, and the remainder of stone (13) and iron (1). In the strictly residence portion of the city—in fact, in all but the third and fourth wards—the large majority of the buildings are of one story, there being (with the exceptions above noted) 4,188 dwellings of one story, as against 2,198 of two or more stories. Many of the structures returned as “occupied dwellings” are, in effect the cabins of one or two rooms which, prior to 1861-’62, constituted the slave-servants’ quarters. Of these (one or two

roomed dwellings) there are 1,209 returned; and this item is of consequence in connection with the remarks which follow concerning the condemnation of buildings.

About 10 per cent. of the total number of all buildings have been erected within the past five years, and nearly one-fourth of the total number were erected between 1870 and 1875. These buildings, 2,524 in number, embrace the large majority of the really healthy habitations, and substantial, well-ventilated and properly lighted business blocks. A large number of buildings erected between 1865 and 1870 are mere shells, with thin, insecure walls, flimsy and badly fitting wood-work, and inadequate ventilation and lighting. There are few exceptions to the indictment of this class. Of the remainder (about 40 per cent. of the total number), the ages range from fifteen to fifty years, and there are few of these which do not require radical alterations in order to justify their retention for occupancy.

One of the most important defects noticeable in dwellings is the want of subventilation, 1,453 dwellings being built so close to the ground as to have no air-space beneath the floor; 2,030 others have insufficient or obstructed subventilation; and only 2,204 (about two-fifths of the total number) comply with the proper requirements in this respect.

CELLARS AND BASEMENTS.

There are 1,515 buildings with cellars and basements, and of these over one-half (786) are badly ventilated, damp or wet, many with water standing from two to eighteen inches deep on the floors, and with walls soaked by sipage from the surrounding polluted soil. As very few of these cellars are more than 9 feet deep—fully one-half being between seven 7 and 8 feet, and about one-fourth being less than 7 feet deep—any general system of sewerage and subsoil drainage will remedy this latter defect.

In the two principal business wards of the city (the third and fourth) more than one-third of the buildings were found to have privy vaults in cellars or basements. Many of these buildings are upward of twenty years old, and the cellars contain from one to five vaults each, the accumulations of an average of a quarter of a century being imperfectly covered over with ashes or earth.

Not infrequently the rain-water cistern, from which water for all purposes is used, was found surrounded by these vaults with the walls almost touching each other. A few instances are to be found in every part of the city; but the majority are grouped where they are likely to do the most harm—in the densely built and oldest regions.

Among the minor subterranean defects found were 426 cellars and basements fouled by accumulations of decomposing organic matter, infected material, etc. (The past tense is here used advisedly, since much of this has been already remedied through the efforts of the board of health, which has caused most of these cellars to be cleansed and whitewashed and the vaults emptied, disinfected and filled up.)

SOIL AND WATER POLLUTION.

So much has been written and said, *ad nauseam*, of the privy system of Memphis that it is proposed to dismiss it here in a very summary manner, and this the more justifiably, since there is a strong probability of its soon being numbered among the things of the past. At the date of inspection there were found nearly 6,000 sub-surface vaults in use. These varied from mere shallow pits, without any lining, to brick vaults of forty feet (and upward) in depth. Considerably less than one-third were sufficiently remote from living-rooms, while the remainder were placed at all degrees of proximity, even to being, as already stated, grouped in cellars. Of the total number, 3,607 were in a foul condition. The extent of the soil pollution from this source may be better inferred when it is understood that the above figures do not include a large (probably equal) number of disused, but unemptied, vaults, the contents of which were only imperfectly covered by a shallow layer of ashes or refuse.

When it is considered that of the 4,744 cisterns and wells which furnish the large share of the water consumed, 3,408 are within contaminating distance of the known locations of these vaults, and that a large proportion of such cisterns and wells are known to be defective, enough will have been said on these points to indicate some of the causes of the high death-rate of Memphis.

MORTALITY IN MEMPHIS.

An analysis of the mortality records of the health office [for the past five years furnishes the following table, which is of interest in this connection :

Causes of death.	Years.					Totals.
	1875.	1876.	1877.	1878.	1879.	
Malarial fever.....	127	99	121	126	68	541
Typhoid and typho-malarial fever.....	23	37	41	19	18	138
Cerebro-spinal malarial fever..	16	14	17	18	1	66
Yellow fever.....	0	0	0	2,779	497	3,276*
Erysipelas	6	1	6	1	12	26
Dysentery	66	79	63	30	25	263
Diarrhœa	30	67	61	46	36	240
Cholera infantum.....	52	21	31	19	32	155
Scarlatina	1	49	17	1	0	68
Diphtheria	5	8	13	11	1	38
Croup	13	4	5	6	11	39
Whooping-cough	25	7	1	20	1	54
Small-pox	8	0	0	0	0	8
Measles	0	13	2	35	0	50
Pneumonia	88	87	108	83	136	502
Phthisis	172	159	180	176	143	830
All other diseases of lungs	18	25	28	34	10	115
Diseases of the heart.....	27	27	28	29	26	137
Diseases of the urinary organs.	2	6	11	1	5	25
Tetanus	10	11	13	7	5	46
Puerperal diseases.....	17	6	17	14	21	75
All other causes.....	468	308	491	552	520	2,339
Totals	1,174	1,028	1,454	4,007	1,568	9,230

From the foregoing it will be seen that, exclusive of the mortality from yellow fever, the average death-rate of Memphis is thirty-four per thousand, assuming the average population for the past five years to have been 35,000. On the census of 1879 the total mortality for that year was fifty-one in the thousand, and exclusive of yellow fever it was thirty in the thousand. The average death-rate from all causes during the three non-epidemic years was thirty-five. Of the total number of deaths during the past five years over fifteen per cent. were due to phthisis, pneumonia, and other diseases of the lungs, the excess being fairly attributable to defective sub-ventilation of dwellings and to an undrained retentive soil. Excremental and malarial diseases

caused nearly fifty-seven per cent. of the total, and this excess may be set down as due, in great measure, to soil and water pollution.

Under a reasonably efficient sanitary *régime*, with a good sewerage system and pure water supply, the average death-rate of the city should be reduced to about twenty in the thousand within the next lustrum. Until the social and moral status of the colored population is materially improved, it will probably be too much to expect that the theoretical standard of seventeen in the thousand can be attained.*

* Without any special relevancy to the above, but simply to record the information, the following data concerning epidemic diseases in Memphis are here appended. These have been obtained from the note-books of physicians and from other sources among the citizens, and are believed to be trustworthy so far as they go.

YELLOW FEVER.—First epidemic in 1838: distributed pretty generally throughout the village, at that time occupying the bluff near the Mississippi, and mainly north of Market street; over 150 cases in a population of about 700; mortality, 56 recorded deaths. Second epidemic in 1835: confined principally to area south of Union street (South Memphis and Fort Pickering,) but followed the bayou on both sides, north and west to Wolf River; estimated number of cases 1,250 in a population of about 13,000; mortality 220 (estimated.) Third epidemic in 1867: included area of epidemic of 1835, and extended north and east; estimated number of cases, 2,500 in a population of 36,000; mortality, 500 to 530. Fourth epidemic in 1873: spread pretty generally throughout the city, but more severe in northern portion ("The Pinch," "Chelsea," and eighth ward,) and extended east beyond city limits; estimated number of cases, 7,000 out of a population reduced by flight to between 15,000 and 20,000; mortality, recorded between September 14, and November 9 (last death), 1,244; estimated total mortality from August 10 (first death) upward of 2,000. Fifth epidemic in 1878: no portion of city or suburbs exempt; number of cases 17,600 out of remaining population of 19,500; mortality, 5,150 recorded deaths. Sixth epidemic in 1879: area as general as in 1878, except in localities depopulated by flight or removal to camps; total number of recorded cases between July 9 and November 15 (cases occurred in December) 1,532 out of an estimated remaining population of 18,500, of which number 75 per cent. were "protected," in the sense of having previously had the disease: total recorded mortality, 435. The disease was brought to the city in several other years, but was not communicated to the inhabitants. This was notably the case in 1853, when upward of 80 imported cases were treated in hospital and boarding-houses without any spread.

CHOLERA.—First appearance in the winter of 1832-'33; number of cases and mortality unknown, but it is described as having been severe and general. Second epidemic in 1835: said to have been between 300 and 400 cases, with a mortality of about 15 per cent.; no data of population at this time, but probably about 2,400. Third epidemic in 1849: estimated number of cases about 1,300 in a population of less than 8,000; particularly severe among river boatmen and the foreign population in "The Pinch"; mortality said to have been about 33 per cent. Fourth epidemic in 1867: about 600 cases, mostly among negroes; mortality unknown; disease most severe along Causey street and vicinity (line of contact of fifth and sixth wards.) Fifth epidemic in 1873: about 1,000 cases, with 276 recorded deaths; entire population is said to have been afflicted with choleraic diarrhoea.

In addition to the foregoing, small-pox was epidemic in 1835 and in 1873; influenza in 1842; dysentery in 1844 (local, confined to "The Pinch," about 400 cases, and between 40 and 50 deaths); jaundice, erysipelas, and puerperal fever in 1853; and dengue in 1860. Prior to 1850 diarrhoeal diseases were excessively prevalent, attributed to use of well and spring water: claimed to have diminished on substitution of cistern water.

Selections.

A FOURTH YEAR IN THE MEDICAL SCHOOL. By Professor JAMES C. WHITE, M.D., Med. Dept. Howard Univ'y.

Ten years have not yet passed since the medical department of the University took that great step which has so largely changed the character of medical education in this country, and each succeeding year has demonstrated more positively the advantages of the measures then adopted. The classes have grown constantly larger; and the quality of the students has improved in the same degree, nearly one-half of them being at present graduates in arts or sciences. The complete success of this reform has not failed to impress itself upon other medical schools in all parts of the country, and some of the most important of them have adopted and are about to adopt the "Harvard plan." In the meantime the school has not been content to rest upon the merits of its first step. As soon as practical it instituted an admission examination, so as to exclude at the start that class of students who would approach the study of medicine unfitted by any previous mental training; and it has just now materially added to the efficiency of this preliminary test. It has continuously sought to enlarge the scope, to systematize and to improve the quality, of its instruction, and has been constantly adding to its corps of instructors, which now number over forty. But with this great increase in the amount of teaching, a serious obstacle arose—a want of time in which to teach properly. It had become, in fact, an impossibility for the student to profit by all the instruction offered; and some of the special branches taught, those not considered essential in the requirements of graduation, were largely and necessarily neglected.

The medical faculty has long recognized the necessity of adding another year to the curriculum. America is the only civilized country which gives the degree of doctor in medicine in a three-years' course of study. In how much less time, and on what slight requirements, many of her colleges confer this title, I am ashamed to say. Several of the European universities require six years of study. But the establishment of a fourth year was felt to be also a serious matter in the face of the strong rivalry of schools so lax in their requirements in this regard; and it has not seemed practicable before the present full financial prosperity of the school was assured, and its extensive system of general and special teaching thoroughly organized, to attempt this additional step in medical education. Even now the faculty does not deem it wise to make the four-years' course obligatory at the start, but has left it optional for the present to the student, whether he will continue to attempt to crowd an impossible amount of work into three years, or spread his studies over the longer period in a proper order, and reap the full advantages of all the instruction which is offered him. There can be no doubt that the latter course will be chosen by that large class of students who are constantly disappointed in their endeavors to do justice to all the teaching open to them. To those, however, who are unable to avail themselves of this extended plan of education, the degree of Doctor of Medicine will continue to be given, until further notice, at the end of three years of study under the conditions hitherto observed, and there will be no diminution in the amount, or change in the arrangement, of instruction hitherto given in this course.

The faculty, however, urgently recommend the following plan of study to all students desiring a thorough medical education:

FIRST YEAR.—The studies of the first year are to be, as hitherto, anatomy, physiology and general chemistry; and there will be an examination upon these at the end of the year.

SECOND YEAR.—During the second year the studies will be topographical and practical anatomy, pathological anatomy, medical chemistry, and materia medica; and an examination will be held upon them at the close of the year, general anatomy excepted.

THIRD YEAR.—At the end of the third year there will be an examination in therapeutics, theory and practice, obstetrics, and surgery; and at the close of the

FOURTH YEAR, in clinical medicine, clinical and operative surgery, obstetrics, clinical and operative obstetrics, ophthalmology, otology, dermatology, syphilis, mental and nervous diseases, laryngology, hygiene, legal medicine, diseases of women, and diseases of children; but the main studies of the third and fourth years will be more or less continuous.

The instruction in the special branches, in which an examination is now for the first time instituted, is intended to be more clinical and individual in character than that heretofore given, and should in a large measure take the place of that practical private teaching which has been hitherto sought by American students in European schools after graduation. In the general branches of medical education, too, instruction will be carried, especially in practical directions, farther than was possible in the former cramped period of study. The degree of Doctor of Medicine will be given to candidates who have passed a satisfactory examination in all the studies of the four-years' course, and the distinctive degree *cum laude* to those who have pursued the whole course, and have obtained an average of seventy-five per cent. upon all the examinations above given.

The new plan of instruction goes into operation at the beginning of the next academic year, and can be adopted by all students who are then members of the school. It deserves, and will undoubtedly receive, the earnest support of the profession in all parts of the country.

HEMORRHOIDS TREATED WITH CAPSICUM.—Vidal. (*Journ. de Méd.*, Feb., 1880, p. 70.)

In cases of hemorrhoidal congestion Vidal regards capsicum annuum as the best remedy. He prescribes four or five pills daily, each containing 20 centigrams, half at breakfast-time and half at supper-time. Under this influence the congestion and all the painful symptoms which accompany it disappear rapidly.

Summary.

Collaborators :

DR. L. W. CASE,

DR. R. TILLEY.

PRACTICAL MEDICINE.

LECTURE ON EPILEPSY.—By W. R. Gowers, M.D., F.R.C.P.

The third lecture was devoted to pathology and treatment. Pathological anatomy in idiopathic epilepsy gives us little help. Regarding convulsions, however, pathological anatomy and experiment give us two sets of facts regarding the seat of the "discharge." Experiment shows that convulsions may originate in the medulla, from a center near the respiratory. On the other hand, no local diseases cause convulsions so frequently as those of the cortex; and irritation of the cortical motor "centers" may cause convulsions, having definite modes of onset, like those sometimes seen in idiopathic disease. But other experimental facts make it possible that these convulsions, though excitable from the surface, arise in connected lower centers. Hence the latest writer of a systematic account of the disease, Rothnagel, with full knowledge of all pathological and experimental facts, concludes that epilepsy is a disease of the medulla oblongata. But the clinical study of modes of onset shows that at least many attacks commence in the hemispheres, viz., those of which the earliest symptom is a special sense or physical aura. The clinical evidence that attacks ever commence in the medulla is small. The "pneumogastric aura" might be regarded as such evidence, but it may be present in attacks which certainly originate in the hemispheres. Such visceral sensations may accompany physical

auræ, as they do normal physical states (*e. g.*, fear). A curious case, however, was narrated, in which fits could be produced by passive movement of the spine, evidence of a probable origin in the medulla. The wide extent of "warnings" makes it probable that, as Dr. Hughlings Jackson has suggested, any of the gray matter of the encephalon which subserves sensori-motor processes may be the seat of the primary discharge in idiopathic epilepsy, but the evidence that the process of the fit commences in the hemispheres is much stronger and more frequent than that it commences lower down.

To explain loss of consciousness, vaso-motor spasm has been assumed, but the hypothesis is unnecessary, since the affection of consciousness may be the result of the discharge. Other evidence that vaso-motor spasm causes any of the symptoms is inconclusive. Pallor of face is not invariable, and does not necessarily show anæmia of brain. It may result from the cerebral discharge. To explain all the symptoms of attacks it is unnecessary to go farther than the instability of the gray matter in which the discharge begins.

This instability may be better understood as instability of resistance than as any increase in the energy-producing function of cells. The doctrine of internal resistance to action has underlain many current expressions as "nerve-tension," and its recognition gives us clearer views of many physiological and pathological problems. Thus we can understand why loss of blood causes convulsions, or a peripheral impression can arrest a fit, not for the moment, but for a long time.

The treatment of epilepsy, it was remarked, is a subject on which numerical analysis gives little help, because so many patients whose fits cease under treatment relapse when treatment is relinquished. The time available permitted little more than a statement of the remedies most useful in 562 cases in which the effect of treatment was carefully noted. The results showed that while we must not rely *exclusively* on bromides, on these our chief trust must still be placed. Of the three alkaline salts the bromide of potassium deserves, as it has received, the first place. The salt of ammonium is more useful, only in proportion to the slightly greater quantity of bromine which it contains, while a

careful comparison in a series of cases, between the salts of sodium and potassium showed that the former is distinctly less useful. The maximum effect of each dose of bromide occurs the sooner, the smaller the dose; hence small doses used to be given frequently. Bromide lessens reflex action, perhaps by increasing resistance in the center, since it antagonises strychnia, which is believed to lessen resistance. If the view that unstable resistance is the chief element in epilepsy is correct, increase of resistance may be the explanation of the action of bromide. The mode of administration is usually by continuous course, in doses just sufficient to arrest the fits. Given thus it was rarely found well to give more than a drachm and a half daily; if this does not suffice, combinations with other drugs answered better than increasing the regular dose. But it was urged that a course of large doses may be for a time employed, with a view of obtaining the full nutritive change in the nervous system, which bromide can effect. For this purpose it was thought best to give it in considerable doses, at longer intervals, beginning with half an ounce. The largest single doses given had been of one ounce, the doses being given at intervals of three to five days.

The value of the various combinations of bromide with other drugs had been tested by ascertaining first, during several months, the effect of a given dose of bromide, and then adding to it the agent to be tested. Of the combinations in common use, those with digitalis and belladonna deserve, as they have commonly received, the first place. Digitalis has enjoyed repute in epilepsy for two hundred years. Alone it sometimes does marked good, and in 63 cases the combination of digitalis and bromide was distinctly more useful than bromide only; in 37 of the cases the attacks ceased during the treatment. The effect of this combination is not confined to the cases in which there is cardiac disturbance, although in these it is almost always useful. Digitalis markedly increases the effect of bromide in nocturnal epilepsy. A case was mentioned in which a patient had not had a single fit for two years on the combination, although he had a fit at night every few weeks on bromide only. Belladonna alone will sometimes arrest attacks. The combination of it with bromide was distinctly more useful than bromide alone in 35 cases, and in 15 arrest of the fits

was obtained. Indian hemp is now and then of marked service even alone. A case was mentioned in which the attacks always ceased on this drug, and recurred at once when bromide was substituted. Other combinations which had been found useful were bromide with aconite, and bromide with hydrocyanic acid. The cases in which the addition of iodide to bromide increases its effect are rare.

Zinc deserves some of the repute it has enjoyed for more than a hundred years. Of a large number of cases, in which the oxide was used in doses as large as the patient could bear it, it was distinctly useful in ten, but in only three did the attacks cease. Bromide of zinc, in doses which could be borne, and the bromide of camphor, had seemed of small value. The addition of arsenic to bromide in no case had any influence on the fits, although largely used, on account of the certainty with which the bromide rash could thus be lessened or removed. Turpentine (recommended by Dr. Radcliffe) had been found distinctly useful only in hystero-epilepsy. The use of iron in epilepsy was discountenanced by high authorities. In some cases it seemed to increase the attacks, but in the majority in which it had been given its influence was distinctly beneficial. In four cases the attacks ceased on iron only; in eight others iron alone was distinctly better than bromide alone; and in nineteen the addition of iron to bromide had a marked influence; in eleven the attacks, which had persisted on bromide, ceased when iron was added, and remained absent as long as the combination was given. In several inveterate cases, in which bromide had little effect, the lecturer had given borax in doses of ten to fifteen grains twice or three times a day. In some it was useless, in some its beneficial effect was most distinct. Several cases were narrated in which the attacks ceased for a long time under its use. Occasionally it causes gastro-intestinal disturbance, but many patients bear it well. *Cocculus indicus* had not been tried sufficiently for an opinion to be formed, but very little benefit had been observed from its alkaloid, picrotoxine. The same conclusion was drawn from an interesting series of cases in which Dr. Ramskill had employed it hypodermically, which showed, however, that a dose of eighteen milligrammes will almost invariably produce a fit in

from twenty to thirty minutes. Other drugs which had been tried and found useless were benzoate of soda and nitro-glycerine.

In hystero-epilepsy, bromides, sometimes useful, often fail. Belladonna, iron, valerianate of zinc, and turpentine had appeared of greatest value. The treatment of the actual attacks of hystero-epilepsy is often a matter of difficulty. In the slight fits Dr. Pare's plan of closing the mouth and nose is often useful. When this fails Faradization of the skin and cold douches on the head and water poured into the open mouth are often efficacious. Chloroform is of little value. Where all fail the lecturer had found the hypodermic injection of apomorphia invariably successful. After a twelfth of a grain had been injected, in four minutes all spasm was over, in six minutes the patient would get up, in eight minutes vomit, and then, except for slight nausea, be well.

In conclusion, the lecturer remarked that although the condition of many epileptics was still gloomy enough, yet the present generation had witnessed an advance in the treatment of the disease equalled perhaps in no other branch of therapeutics. Thanks to the influence of the drug the use of which in epilepsy was wholly due to fellows of that college, hundreds of sufferers had been cured, and thousands were leading useful lives who would otherwise have been incapacitated by the disease. For all the victims of the disease we might surely trust that the progress of the recent past is the dawn of a brighter day.

OBSTETRICS AND GYNÆCOLOGY.

THE DIAGNOSIS OF LARGE OVARIAN TUMORS.—In No. 1 *Centralblatt, für Gynäkologie* for the present year, Dr. B. S. Schultze, of Jena, records two illustrative cases in support of the value of the method of diagnosis recommended by him in No. 6 of the same journal in 1879, and already reported in our retrospect, vol. xxiv., p. 1131. This method consists in putting the patient deeply under chloroform, subjecting the tumor to alternate elevations and depressions and displacements from side to side by means of an assistant grasping it through the abdomen,

whilst the examiner practices the abdomino-rectal manipulation, and is able to satisfy himself of the presence or absence of a uterine or ovarian connection with the tumor, the length of the pedicle, the character of it as to breadth and thickness, etc. Two extremely important cases are recorded, in which the diagnosis of an ovarian tumor, and the exact nature of its pedicle and source of origin, was readily made out by Schultze, notwithstanding that subsequent operation proved that the tumor had the most extensive adhesion to the abdominal wall, the omentum, colon, etc. Schultze argues that the application of this method as a means of exact diagnosis is wider than he had expected, and that the most extensive adhesions do not destroy its value. It therefore, according to him, will enable the operator to proceed in many otherwise doubtful cases directly to operate, when he would have, without it, required to make an exploratory examination.

ON THE ELUCIDATION OF THE INDICATIONS FOR TREATMENT OF ANTI- AND RETRO-VERSIONS AND OF ANTI- AND RETRO-FLEXIONS OF THE UTERUS, is the subject of No. 176 in Volkmann's *Collection of Clinical Lectures* by Schultze, and is abstracted in No. 2 of the above-mentioned *Centralblatt* for 1880. The author briefly explains his position on the question of versions and flexions. Generally, the importance of changes of position is asserted, but care is taken to guard against the theory that the same etiology and the same treatment is to be held as self-evident in the case of retroflexions and antelexions and versions. The intra-uterine stems are altogether rejected. Whilst in retroflexions fixation of the fundus is secondary as an etiological influence, relaxation of Douglas's folds primary, in anteversion we find the reverse of the fact, viz., the pathological shortening of Douglas's folds to be the primary etiological influence. Some diagrammatic drawings indicate in the most simple and clear manner the views of the author. The legend of obstructive dysmenorrhœa, which has legalized so many fatal therapeutic procedures, is to be utterly rejected. That flexion of itself can condition stenosis the author emphatically denies. The hope is expressed that this view, stated authoritatively, will contribute to definitely liberate German gynæcology from the fetters of im-

ported opinions unfortunately too readily accepted. In anteversions and antelexions the author sees generally no indication for mechanical treatment. It is possibly a mistake to attempt to replace even retroflexions and retroversion with the pessary. We must first replace the uterus by hand; then the pessary has the single object and the single aim of retaining the now normally situated uterus in its normal position.

DISEASES OF BLOOD-VESSELS OF THE OVARY IN RELATION TO THE GENESIS OF OVARIAN CYSTS; is the subject of a highly interesting and original contribution to the January number of the *American Journal of Obstetrics* by Dr. Noeggerath of New York. The object of the paper is to demonstrate that the development of a certain percentage of ovarian cysts is due to certain alterations and enlargements of blood-vessels, and thus is formed a variety which the author thinks ought to be called *angioma cysticum*. The conclusion arrived at in the paper is founded upon careful microscopic examination of pathological ovaries, especially of six ovaries removed by Battey's operation from young girls. Dr. Noeggerath found that the structures usually described as *corpora albicantia* were frequently due to enlargement and degeneration of blood-vessels. The coats of the vessels are enlarged, with diminution, though rarely obliteration, of their lumina. The process commences apparently with œdema of the intima or adventitia, whilst the single fibers of the connective tissue element become individually indistinct, melting together, as it were, and ultimately appearing like an aggregation of very finely split up white elastic tissue fibrils glued together. With time the nuclei grow thinner and shorter, assuming shapes occasionally like what are met with in myxomatous tissue. The process could be traced, passing through different stages, from a period when the loops of blood-vessels could be distinctly made out to the time when nothing could be detected but a homogeneous mass. In the small arteries there could be detected a hyaline degeneration of the connective tissue of the intima and of the intermuscular connective tissue, and also a growth of the cellular elements of the media both in number and in size, with the effect of almost entirely obliterating their lumina. The structure formed by degeneration

of the blood-vessels of a vascular territory, although exceedingly like a corpus luteum, is capable, Dr. Noeggerath says, however, of being differentiated from it by careful examination. The cells comprising the corpus luteum are deposited in meshes of irregular shape, and are more or less spherical; the degeneration of arteries, on the other hand, has its cells deposited in interstices resembling an oblong rhomboid. The cells comprising a corpus luteum are coarsely granular and yellowish; those of the arterial degeneration are only slightly granular. On further development the cellular element of the corpus luteum gradually gives way before the growth of the connective tissue part of it, the degeneration loses its fibers by atrophy, owing to the growth of single cells. In consequence we have first the formation of an irregular cavity in the center, containing broken up cells. Gradually all the cells comprised within the group of disorganized vessels become disaggregated, softened, and dissolved. Exosmosis adds to the now increased serous portion, and there results a small cyst whose walls consist to a large extent of normal ovarian tissue. These cysts are not lined with epithelium, and are probably of slow growth. In further developing the subject Dr. Noeggerath considers other changes which take place in the coats of ovarian vessels and finally result in the formation of cystic cavities. One mode of development he attributes to a kind of endarteritis destruens. Here at the commencement a large number of vessels, chiefly arteries, are found closely aggregated together. These have the peculiarity that the elements of their media have increased in number and in size, so as to make the intima appear in a state of atrophy. These ultimately develop into well-formed layers of muscular tissue. Still the several bundles are so arranged that we can without difficulty recognize their development from vessels. The characteristic peculiarity of these masses is that a large number of fissures of oblong shape, and each containing a cell, are arranged concentrically round them. These are larger the nearer the center or lumen of the vessel they are placed, and they tend to enlarge so as to break up the tissues and empty their contents into the lumen, which thus becomes enlarged and dilated into a cyst. Dr. Noeggerath is further driven to conclude that in a certain number of cases those epithelial tubes

found in ovaries as precursors of ovarian cysts are not derived, as Waldeyer, De Sinety, Manassez, etc., believe, from germinal epithelium, but from the tissue comprising the capillary blood-vessels, as he finds the microscopical characters of undoubted vascular changes seen by himself come exceedingly near in general appearance to these so-called tubes as figured by Waldeyer.

A CASE OF ACUTE SPONTANEOUS INVERSION OF THE UTERUS OCCURRING AFTER ABORTION DURING THE FIFTH MONTH OF PREGNANCY, is recorded by Dr. Scott of Philadelphia, in the same journal for January. The details of the case are given with some minuteness, and are interesting as demonstrating that the inversion occurred from no injurious traction on the fundus through the cord or pressure upon it from above. The author explains the accident as essentially due to a peculiar condition of the placenta, which was about three-fourths of an inch in thickness and lined the whole of the interior of the uterus. This thick placenta must have filled the os in such a manner as to increase its diameter about $1\frac{1}{2}$ inches more than was necessary to permit the escape of the head. This dilatation, conjoined with weakness and flaccidity of the uterine tissues, together with the vis-a-tergo effected by the action of the abdominal muscles, appeared to the author to be the efficient causes of the inversion. Records of several interesting cases of spontaneous inversion occurring prior to period of viability of the foetus are also included in the paper.

THERAPEUTICS.

TANNATE OF PELLETIERIN AS A TÆNIAFUGE.—The active principle of the bark of the *Punica granatum*, discovered by M. Tauret, and described by him under the name of pelletierin, has been used with success as a remedy for tænia. It is given in the form of tannate, in doses of (gr. viij) 50 centigrams, followed in two hours by (5j) 30 grams of castor oil. Dr. Laudrien describes its action as follows: In the two cases observed neither colic nor headache were occasioned. In the first the patient had been prepared by dieting, and a single dose sufficed to expel the tænia entire. In

the second, though one dose did not suffice, the patient was not weakened by the treatment. The patient did not exhibit that repugnance so constantly shown to the administration of kousso or pomegranate bark. In a third case the administration of a dose of the hydrochlorate of pelletierin brought away 15 metres of worm, the only phenomena observed being diplopia and a slight tendency to syncope, both of which soon passed off. The pulse and temperature were not influenced by this medicine; nor were the kidneys in any way affected. The medicine seemed to have an elective and toxic action operating solely on the tænia. (*Jour. de Méd. de Bordeaux*, 18th June, 1879; *The New York Med. Record*, 6th Sept. 1879).—*The Practitioner*, Feb., 1880.

RHUS TOXICODENDRON.—Dr. John A. Henning (*Cincinnati Lancet*) calls attention to the value of the above named drug. It admirably meets certain indications. Thus it removes the dull, heavy, aching pain above the eyes in cases of catarrh. It speedily modifies the burning pain of erysipelas. Combined with gelseminum it increases its power to reduce temperature. In forms of inflammation accompanied by a burning, stinging pain, it quickly removes the pain. In spinal irritation, with enfeebled circulation or spinal anæmia, it is an excellent remedy combined with nux vomica. It is also indicated in passive congestion of the brain or in meningitis. Its general action, when taken in proper doses, is as a laxative, diaphoretic, diuretic, and particularly as a stimulant of the nervous system. The dose is from five to fifteen minims in half an ounce of water.—*The Detroit Lancet*, January, 1880.

HYDROFLUORIC ACID INHALATIONS IN DIPHTHERIA.—Bergerson treated diphtheria in twenty-four cases, with five deaths. The dose is one grain for each cubic meter which the apartment contains, evaporated in the space of three hours. He claims (1.) Inhalations thus given never produced injurious results; (2.) All submitted to this treatment for forty-eight hours were cured; (3.) The membranes do not persist beyond the fifth day; (4.) In no case does paralysis supervene.—*Medical and Surgical Reporter*, 3d January, 1880.

ANNOUNCEMENTS FOR THE MONTH.

SOCIETY MEETINGS.

Chicago Medical Society—Mondays, May 3 and 17.

West Chicago Medical Society—Mondays, May 10 and 24.

CLINICS.

MONDAY.

Eye and Ear Infirmary—2 p. m., Ophthalmological, by Prof. Holmes; 3 p. m., Otological, by Prof. Jones.

Mercy Hospital—2 p. m., Surgical, by Prof. Andrews.

Rush Medical College—2 p. m., Dermatological and Venereal, by Prof. Hyde; 3 p. m., Medical, by Dr. Bridge.

Woman's Medical College—2 p. m., Dermatological and Venereal, by Prof. Maynard; 3 p. m., Diseases of the Chest, Prof. Ingals.

TUESDAY.

Cook County Hospital—2 to 4 p. m., Medical and Surgical Clinics.

Mercy Hospital—2 p. m., Medical, by Prof. Quine.

WEDNESDAY.

Chicago Medical College—2 p. m., Eye and Ear, by Prof. Jones.

Rush Medical College—3:30 to 4:30 p. m., Diseases of the Chest, by Dr. E. Fletcher Ingals.

THURSDAY.

Chicago Medical College—2 p. m., Gynæcological, by Prof. Jenks.

Rush Medical College—3 p. m., Diseases of the Nervous System, by Prof. Lyman.

Eye and Ear Infirmary—2 p. m., Ophthalmological, by Dr. Hotz.

Woman's Medical College—3 p. m., Surgical, by Prof. Owens.

FRIDAY.

Cook County Hospital—2 to 4 p. m., Medical and Surgical Clinics.

Mercy Hospital—2 p. m., Medical, by Prof. Davis.

SATURDAY.

Rush Medical College—2 p. m., Surgical, by Prof. Gunn.

Chicago Medical College—2 p. m., Surgical, by Prof. Isham;
3 p. m., Neurological, by Prof. Jewell.

Woman's Medical College—11 a. m., Ophthalmological, by Prof. Montgomery; 2 p. m., Gynæcological, by Prof. Fitch.

Daily Clinics, from 2 to 4 p. m., at the Central Free Dispensary, and at the South Side Dispensary.